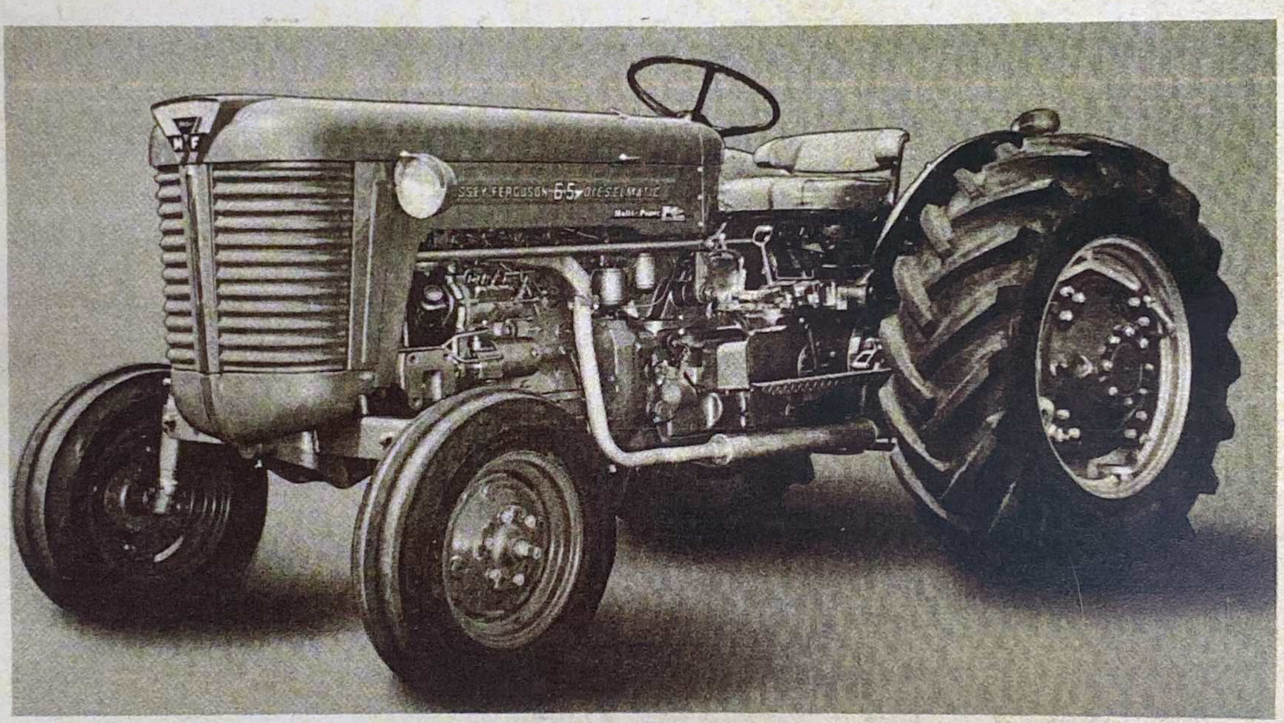
MASSEY-FERGUSON

MF 65

GAS & DIESEL TRACTOR



We are pleased to add your name

Massey Ferguson 65 Tractor Operators manual

To our list of owners of this new Massey-Ferguson machine. We hope that it will give you the utmost satisfaction.

This machine is one of a full line of farm and industrial equipment, manufactured by Massey-Ferguson, which includes the great tractor line with the exclusive Hydraulic system and the world-famous Massey-Ferguson line of self-propelled combines.

The world-wide preference for Massey-Ferguson products is the result of internationally recognized leadership in engineering and precision of manufacturing in every one of our 22 factories in Canada, United States, Great Britain, France, Germany and Australia

We are proud of the wonderful reputation for efficiency and dependability that has been earned by the products of these factories.

Your dealer is one of over 10,000 business men in the great M-F dealer organization who are pledged to uphold the Massey-Ferguson tradition of service to customers.

Massey-Ferguson

IMPORTANT DIESEL TRACTOR PRECAUTIONS

THE FUEL INJECTION EQUIPMENT ON THE DIESEL TRACTORS IS EXTREMELY PRECISION AND DURABLE. HOWEVER, THE INJECTION EQUIPMENT WILL NOT TOLERATE WATER OR SEDIMENT. REMEMBER THIS; IT IS IMPORTANT. THE EXTENT OF TROUBLE-FREE OPERATION THAT YOU MAY EXPECT AND THE ACTUAL LIFE OF THE COMPONENTS WILL DEPEND UPON YOU, THE OWNER, AND THE CARE THAT YOU GIVE THE SYSTEM.

READ THE INFORMATION LISTED ON THIS PAGE, THOROUGHLY, AND ADOPT THE RECOMMENDED PRACTICES. ADHERENCE TO THESE PRACTICES WILL ASSURE ECONOMICAL, TROUBLE-FREE OPERATION AND SATISFACTION WITH YOUR DIESEL TRACTOR.

1. Select a REPUTABLE SUPPLIER and buy only CLEAN diesel fuel which meets the REQUIRED SPECIFICATIONS.
2. Keep fuel clean by adhering to the following practices:
   a. Store fuel in tanks equipped with a WATER TRAP. DRAIN TRAP REGULARLY. Do not store diesel fuel in galvanized tanks.

   b. If it is necessary to store the fuel in drums, make sure they are free of WATER, GASOLINE AND SEDIMENT. Keep drums under cover, away from direct sunlight and rain. Keep plugs in place and tight.

   c. Once in place, avoid moving the tank or drum.

   d. Do not use the last few gallons of fuel from the storage tank, as it is likely to contain water and sediment.

   e. Handle the fuel as little as possible. AVOID USING CANS AND FUNNELS TO TRANSFER FUEL, AS THEY ARE DIFFICULT TO KEEP CLEAN.
3. Fill tractor fuel tank at the end of each day's operation to prevent condensation.
4. Inspect the sediment bowl DAILY before starting the engine. Drain and clean bowl, if water or sediment is present.

   IMPORTANT: IF THE SEDIMENT BOWL REQUIRES FREQUENT DRAINING, ADOPT BETTER METHODS OF STORING AND TRANSFERRING THE FUEL. WATER OR SEDIMENT WILL DAMAGE THE HIGHLY PRECISION INJECTION PUMP AND INJECTORS.
5. Replace the primary and secondary fuel filters at the recommended hourly intervals. DIRTY FUEL FILTERS WILL REDUCE POWER. Make sure to CAREFULLY CLEAN the outside of the filters before removing them. USE ONLY GENUINE M-F FILTER ELEMENTS.
6. NEVER REMOVE THE INJECTION PUMP, INJECTORS, OR FUEL LINES. If the fuel system should require adjustment or servicing, call your Massey-Ferguson Dealer. He has the special training and tools required to do the job properly.

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TRACTOR IDENTIFICATION

Each tractor is identified by a serial number. This number is stamped on a plate located on the right side of the tractor in front of the steering gear housing and just above the voltage regulator. Each tractor engine, likewise, is identified by a serial number. The diesel engine serial number is stamped in the block at the rear of the left side at the top of the block. The gasoline engine serial number is stamped on a plate fastened to the right-hand side of the engine block near the coil. It is important, to eliminate confusion, to refer to these numbers when ordering parts, attachments or requesting service. We suggest you write these numbers in the spaces provided below for a convenient reference.

Serial Number

Engine Number

Massey-Ferguson reserves the right to make changes or add improvements at any time without incurring any obligation to make such changes on machines sold previously.

MF 65 MODELS

The MF 65 may be purchased in a variety of equipment combinations.

A. The standard clearance tractor is available with either a diesel or gasoline engine. Power steering is standard equipment on the diesel and optional on the gasoline tractor. The differential lock is standard equipment on the diesel tractor and optional on the gasoline tractor. Multi-power transmission is optional on both diesel and gasoline tractors.

B. The high clearance tractors are available with either a diesel engine or a gasoline engine. They may be purchased with either of three front ends, namely — (1) the wide front axle, (2) the dual wheel tricycle, and (3) the single wheel tricycle.

Power steering is standard equipment with the diesel engine and optional with the gasoline engine.

The differential lock is standard equipment with the diesel engine, but optional equipment with the gasoline engine. The multi-power transmission is factory-installed optional equipment with both engines.

LUBRICATION AND MAINTENANCE

Proper maintenance and lubrication of your MF 65 Tractor is of vital importance for satisfactory performance and long life. MAKE PROPER MAINTENANCE AND LUBRICATION A HABIT.

Have your local authorized M-F Dealer give your tractor a thorough and complete check once a year and follow on-the-job lubrication and maintenance schedule in this manual. Inspect your tractor closely, as you lubricate, for loose, worn or damaged parts and repair or replace, as necessary. When minor repairs or adjustments are necessary, refer to the service section of this manual.

LUBE SPECIFICATIONS & CAPACITIES

ENGINE CRANKCASE CAPACITIES:

Diesel:	A4-203	6 U.S.,	5 Imp. quarts
	AD4-203	7.5 U.S.,	6.2 Imp. quarts
Gasoline:	G 176	7 U.S.,	5.8 Imp. quarts

(Add ½ quart to all engines when filter is changed).

Recommended Rating:	SAE MS Gas	SAE DG Diesel
Above 90° F	30	30
32° to 90° F	30	20 or 20/20w
10° to 32° F	20	10
-10° or +10° F	10	5 or 5w/20

TRANSMISSION, DIFFERENTIAL and HYDRAULIC SYSTEM:

Capacity: 27 quarts – Std. Transmission (U.S.)
25 quarts – Multi-Power Trans. (U.S.)

SAE Rating:		
	SAE 90	above 50° F
	SAE 80	below 50° F

Use straight mineral gear oil.

POWER STEERING:

Diesel:	A4-203	3.33 U.S.,	2.74 Imp quarts
	AD4-203	(Wooster – Borg Warner) 2.5 U.S.,	2 Imp. pints
Gasoline:	G 176(Cessna)	2 U.S.,	1.7 Imp. pints

(Use type A Transmission oil)

MANUAL STEERING HOUSING:

All Models: 1.5 U.S., 1.3 Imp. pints
(Use Transmission oil)

FINAL DRIVE – PLANETARY (ALL MODELS):

1 U.S., 0.83 Imp. quarts
(Use Transmission oil)
SAE 90 above 50° F. SAE 80 below 50° F.

COOLING SYSTEM:

CAPACITY:	10 U.S., 8.3 Imp. quarts
PRESSURE CAP:	10 P.S.I. Gas 7 P.S.I. Diesel
THERMOSTAT:	
Diesel :	172° F
Gasoline:	160° F

FUEL TANK:

CAPACITY: 17 U.S., 14.1 Imp. gallons

LUBRICATION SYMBOLS

The following symbols are used to indicate operating intervals or working hours, between lubrications and maintenance service. Check your tractormeter for the time readings.

△ 10	10 Hours (Daily)
□ 50	50 Hours (Weekly)
○ 100	100 Hours (Two Weeks)
▭ 200	200 Hours (Monthly)
[500]	500 Hours (Two Months)
◇ 750	750 Hours (Spring and Fall)
▭ 1000	1000 Hours (Yearly)

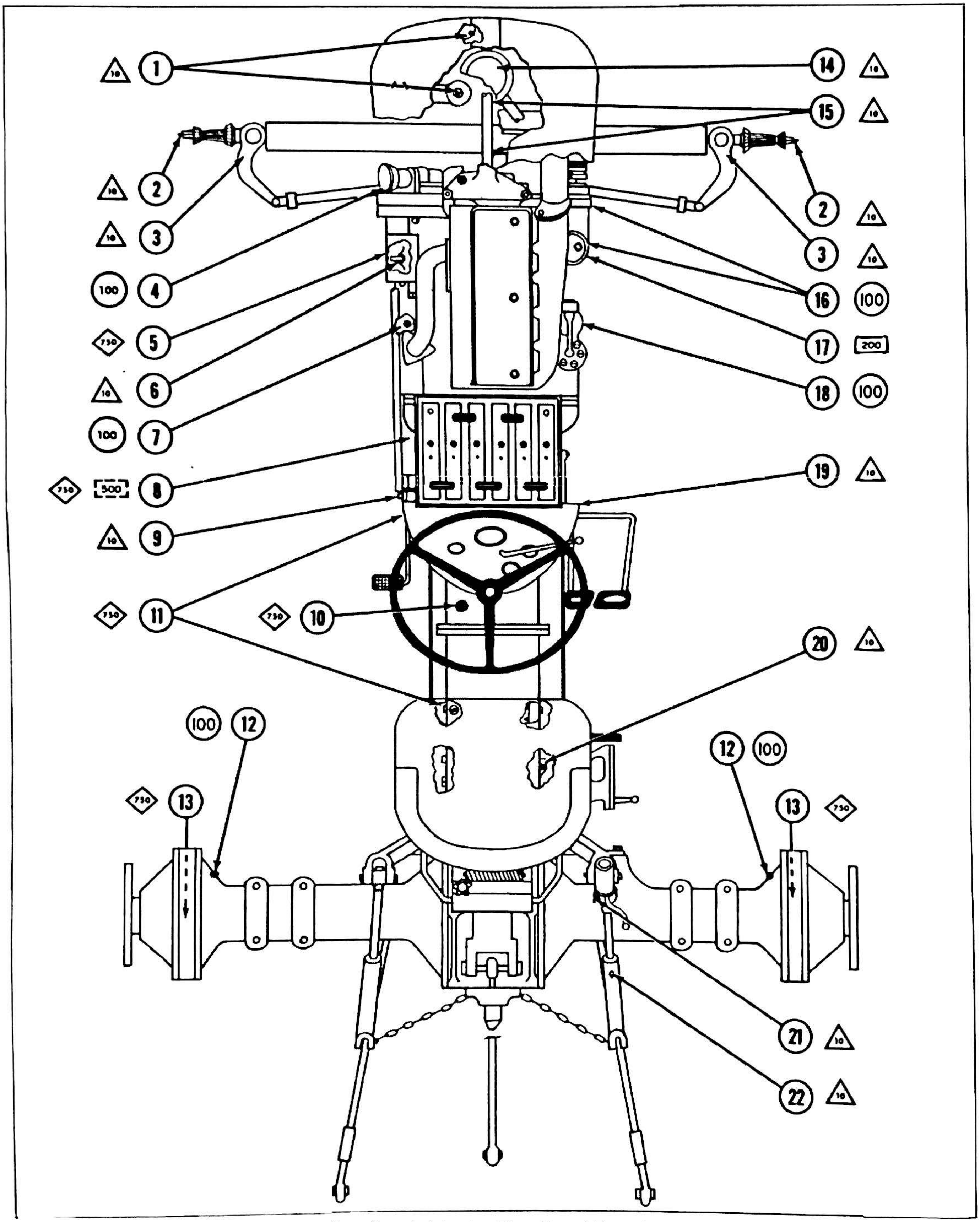

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Fig. 1 – Lubrication Chart (Diesel Engine)

1. Power Steering Pressure Fittings
2. Front Wheel Pressure Fittings
3. Front Spindle Pressure Fitting
4. Engine Oil Filler Cap
5. Power Steering Oil Filter
6. Crankcase Dipstick
7. Crankcase Drain Plug
8. Battery
9. Clutch Pivot Shaft Pressure Fitting
10. Trans-Diff.- Hydraulic System Filler Cap
11. Trans-Diff.- Hydraulic Magnetic Drain Plugs
12. Rear Wheel Planetary Filler Plug
13. Rear Wheel Planetary Drain Plug
14. Air Filter
15. Front Axle Pivot Pressure Fittings
16. Generator Bearing Oil Holes
17. Engine Oil Filter
18. Primary Fuel Pump
19. Brake Pedal Pivot Pressure Fittings
20. Trans-Diff.-Hydraulic Dip Stick
21. Leveling Crank Pressure Fitting
22. Fork Pressure Fitting

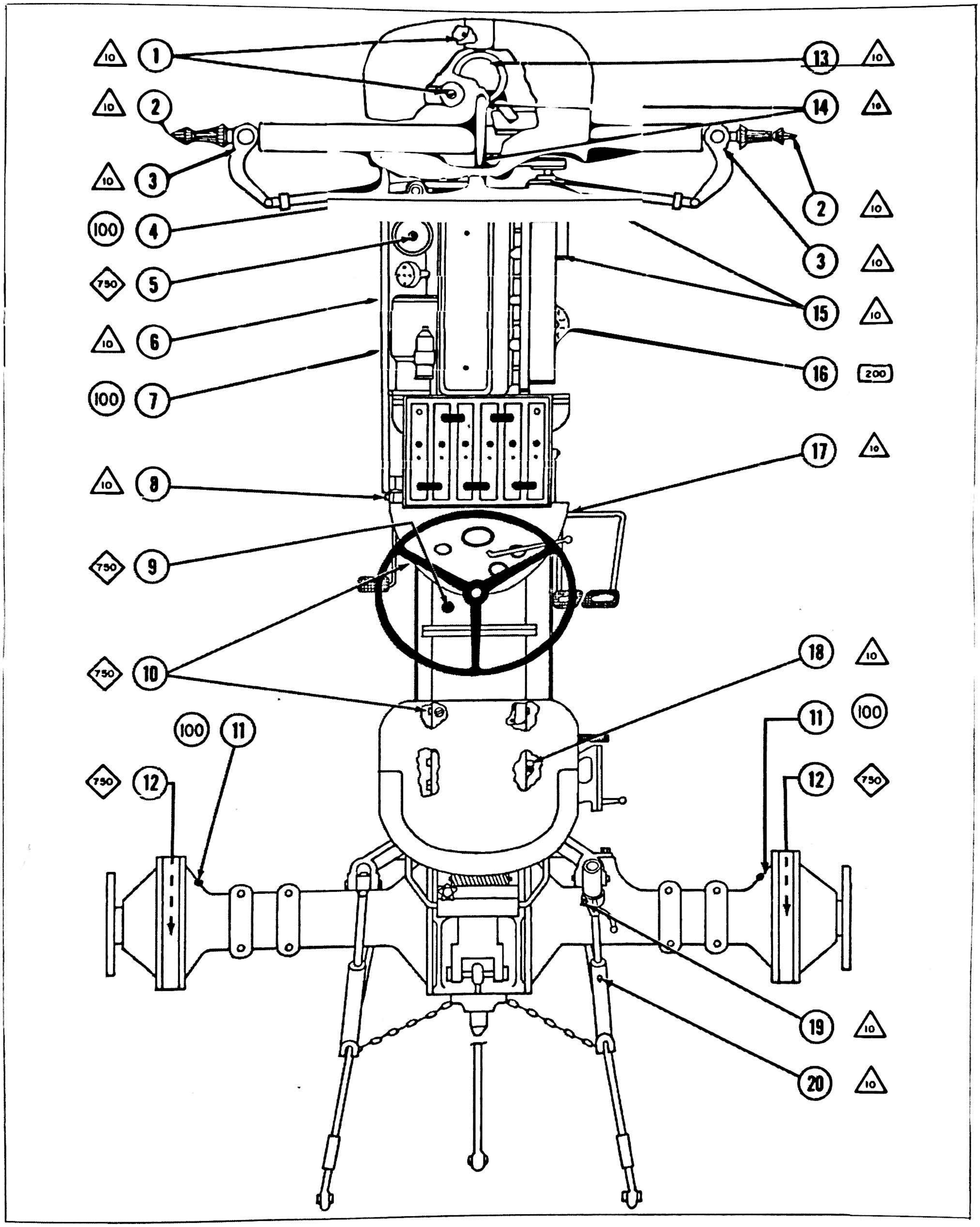
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Fig. 1a – Lubrication Chart (Gasoline Engine)

1. Power Steering Pressure Fittings
2. Front Wheel Pressure Fitting
3. Spindle Pressure Fitting
4. Engine Oil Filler Cap
5. Power Steering Oil Filter
6. Crankcase Dipstick
7. Crankcase Drain Plug
8. Clutch Pedal Pivot Pressure Fitting
9. Trans- Diff- Hydraulic Filler Cap
10. Trans-Diff-Hydraulic Magnetic Drain Plugs
11. Planetary Filler Plug
12. Planetary Drain Plug
13. Air Filter
14. Front Axle Pivot Pressure Fittings
15. Generator Bearing Oil Cups
16. Engine Oil Filter
17. Brake Pedal Pivot Pressure Fitting
18. Trans-Diff-Hydraulic Dip Stick
19. Leveling Crank Pressure Fitting
20. Fork Pressure Fitting

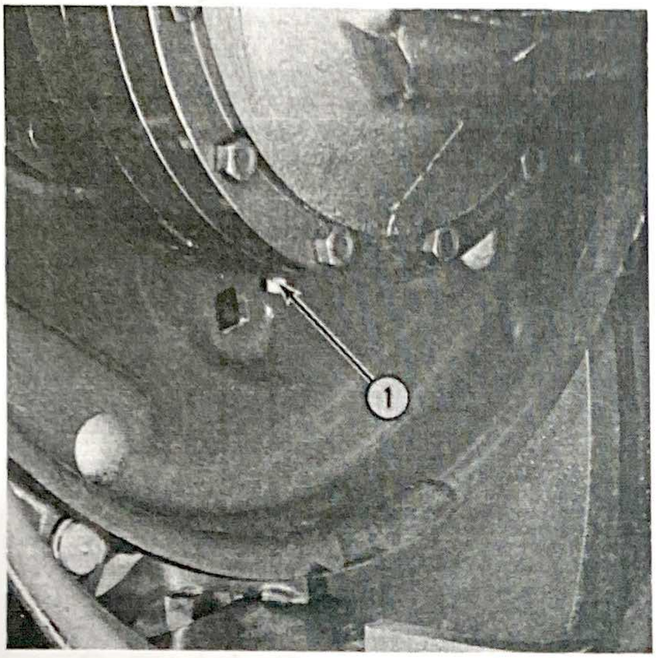


Fig. 2 – Rear Axle Planetary
1. Drain Plug

10

10 HOURS (Daily)

Lubricate pressure grease fittings:

Leveling Box	1
Lift Rod Leveling Fork	1
Front Axle Spindles	1 each
Front Axle Pivot Pins	1 each
Front Wheel Hub Caps	1 each
Tricycle, Single, Front Support Assembly	2
Upper Pedestal (manual steering)	1
Brake Pedal Assembly	1
Clutch Pedal Pivot Shaft	1
Power Steering, Cylinder Pivots	2

Crankcase Dipstick — Maintain oil level at full mark.

Transmission, Hydraulic, Differential Dipstick — Maintain level between arrows.

Air Cleaner — Service daily - more often, when necessary.

Empty and clean oil cup. Fill to "oil level" mark with seasonal grade oil. Inspect and clean, when necessary, intake screen, hose and tube.

> *CAUTION: Never run engine with oil cup removed.*

First Stage Fuel Filter (glass bowl) — Inspect glass bowl daily for water or sediment. If water or sediment is present, drain through fitting at bottom of filter. Do not allow water or sediment to accumulate in glass bowl.

Radiator — Keep coolant 1 inch above core. Remove dirt and chaff from fins.

> *CAUTION: Let engine cool before removing radiator cap.*

Fuel Tank — Fill with clean fuel through a strainer.

50

50 HOURS (Weekly)

Crankcase — Drain and refill after first 50 hours' operation.

Transmission - Differential, Hydraulic System — Drain and refill after *first 50 hours* of operation.

Battery — Clean and inspect cables and battery surface. Clean and grease terminals. Add distilled water to maintain level to bottom of tubes.

(100)

100 HOURS (Two Weeks)

Engine Crankcase — Drain, when warm; refill to full mark on dipstick with correct SAE-rated oil.

Oil Filter — Replace element with every other oil change. Clean case. Reinstall with new element and gaskets.

Generator — 10 drops of oil in each outer bearing oiler. DO NOT OVER - LUBE.

Magnetic Drain Plugs — Remove the magnetic drain plugs from transmission and differential (insert suitable temporary plugs); clean and reinstall.

Rear Axle Planetary — Check and maintain level to filler plug with transmission oil. Use SAE 90 above 50° F; SAE 80 below 50° F.

Fuel Sediment Bowl — Shut off fuel valve, remove sediment bowl, empty, clean and replace the fuel strainer screen in the fuel inlet port.

Carburetor (gasoline tractors only) — Remove, clean and replace the fuel strainer screen in the fuel inlet port.

Clutch Pedal — Inspect and maintain proper clearance and pedal free-play.

Primary and Secondary Fuel Filters (diesel only) — Remove case and filter, clean or replace element, clean case and reassemble. BE SURE GASKETS ARE IN PLACE.

NOTE: Air-bleed the fuel system.

Nuts, Bolts and Screws — Give the tractor a thorough check for loose nuts, bolts and screws, as well as all adjustments.

200 HOURS (Monthly)

Crankcase Breather Pipe (valve cover breather pipe) — Remove, clean and reinstall.

Oil Filter (every other oil change) — Remove and replace filter element. Clean case and reinstall with new gaskets.

Brakes — Maintain 2-1/2 to 3 inches free travel on each pedal (have both pedals the same).

Rear Axle Planetary — Tighten the 12 retainer nuts on each planetary housing.

Fan Belt — Inspect and replace, if worn and slipping. Adjust to 1/2 to 3/4 inch deflection.

Air Cleaner — Remove the complete assembly, wash in solvent, dry and reinstall. Tighten all connections securely.

CAUTION: Do not use gasoline or other flammable cleaners.

Spark Plugs (gasoline tractors) — Remove, clean, regap to 0. 025 inches; reinstall with new gaskets. Torque to 32 ft. -lbs.

500 HOURS (Two Months)

First Stage Fuel Filter (diesel engine) — Remove, clean case and glass bowl, replace element and reinstall, using new sealing gaskets. "Air-bleed" fuel system.

NOTE: Some dusty operating conditions may require more frequent changing.

750 HOURS (Spring and Fall)

Hydraulic System-Transmission-Differential — Drain when oil is warm, with the hydraulic operation levers in the "Down" position, by removing the two magnetic drain plugs. Remove, clean or replace, and reinstall the hydraulic pump intake filter screen. (Be Sure Gasket Is In Place.)

NOTE: When removing the filter assembly, use extreme care to remove it as a complete unit. If the strainer comes apart inside the tractor, the sludge and dirt will fall back into the transmission case.

Power Steering (standard equipment on diesel tractors - optional equipment on gasoline tractors).

The older models require changing the filter element after first 100 hours' operation, then, at 750-hour periods. Maintain oil level 1/4 to 1/2 inch above filter.

The Wooster (on AD4-203 Diesel Tractor) — Seldom needs the filter element changed. Maintain the oil level to the filler port with type "A" automatic transmission fluid.

The Cessna (on 1963 Gasoline Models) — Maintain oil level 1/4 to 1/2 inch above the filter with "A" automatic transmission fluid.

Steering Housing Manual — Maintain oil lever at filler plug opening with transmission fluid.

Rear Axle Planetary — Older models, drain through fill hole with section gun. New models have drain plug in bottom of housing. Refill (both housings) to filler plug opening with transmission fluid (SAE 90 above 50° F; SAE 80 below 50° F).

Radiator — Drain, flush and refill, using a reliable rust inhibitor.

CAUTION: For cold weather operation, be sure anti-freeze is added to protect the cooling system to the lowest anticipated temperature.

Fuel Tank — Drain and flush, removing water and rust.

1000 HOURS (Yearly)

Front Wheel Bearings — The front wheel hub caps are fitted with pressure gun fittings and they should be lubricated as often as working conditions require (rice land or muddy operating conditions require service more often than do dry working conditions). However, this does not change the necessity for removing the hubs, cleaning hubs and bearings and repacking at least once each year with a good quality appropriate grease.

Tractormeter — Put two or three drops of light oil on felt wick at shaft housing on rear of meter.

Fuel Filter (diesel tractor) — Remove and replace the secondary fuel filter. Clean the sump of the case and reinstall with new gaskets. Air-bleed the fuel system.

> *NOTE: Never change the secondary element without changing the primary element.*

Clean the entire tractor and remove rust spots with fine sandpaper. Repaint with matching colors. Replace decals. Your local authorized M-F Dealer can supply you with the proper paint in spray-cans and the necessary decals.

OPERATION

The most reliable satisfactory performance of your new MF 65 can be considerably prolonged if you, the operator, observe a few basic rules and principles of operation and care. As you become accustomed to your tractor, its controls, gauges, and handling ability, you will benefit more from the many hours of planning and designing, as well as the best materials and workmanship that have been put into your tractor. In this manual section, you may acquaint yourself with the controls and gauges that have been designed for your operational convenience and safety.

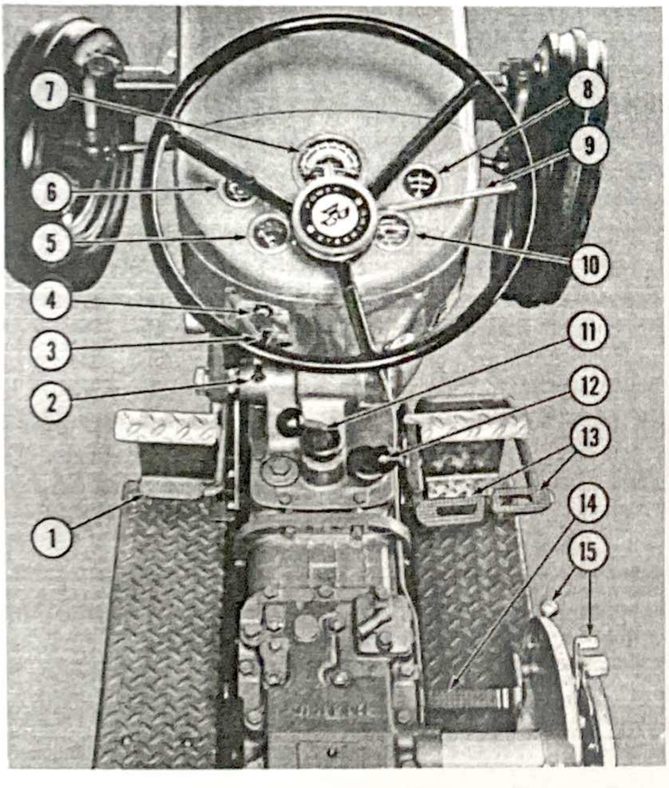


Fig. 3 – Instruments and Controls (Diesel Engine)

1. Clutch Pedal
2. Fuel Shut-off Rod
3. Light Switch
4. Heat-Start Switch
5. Fuel Gauge
6. Oil Pressure Gauge
7. Tractormeter
8. Ammeter
9. Throttle Lever
10. Water Temperature Gauge
11. Gear Shift Lever, Transmission
12. Shift Lever, Dual Range
13. Brake Pedals
14. Differential Lock Pedal
15. Quadramatic Controls

INSTRUMENTS AND CONTROLS

STEERING WHEEL

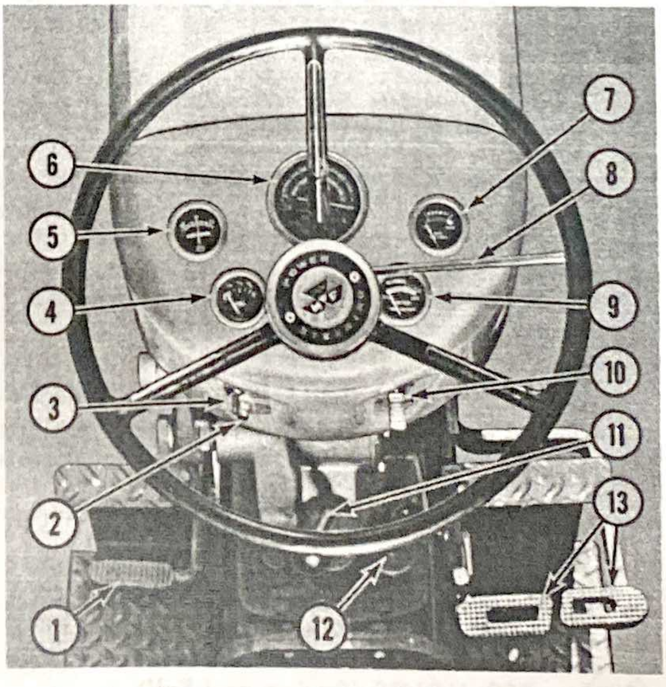


Fig. 4 – Instruments and Controls (Gasoline Engine)

1. Clutch Pedal
2. Starter Switch
3. Ignition-Light Switch
4. Fuel Gauge
5. Ammeter Gauge
6. Tractor Meter
7. Oil Pressure Gauge
8. Throttle Lever
9. Water Temperature Gauge
10. Shift Lever-Multi-Power
11. Shift Lever-Transmission
12. Shift Lever-Dual Range
13. Brake Pedals

A "Deep-Dish" automotive type steering wheel gives the desired wheel-to-seat relationship.

THROTTLE HANDLE

The throttle handle location, in relation to the steering wheel, gives convenient operation control.

STARTER—LIGHT SWITCH (Diesel)

H. S. — Pre-heats air in intake manifold, operates starter, ignition circuit closed.
Heat — Heater, only.
Off — All circuits are open.
Start — Starter and ignition.
When the key is removed, the switch is locked.

LIGHT SWITCH (Diesel)

The pull type switch has three positions:

1. Off — All the way in.

2. Work lights and headlights — First position out.

3. Work lights, headlights and panel light — Outermost position.

FUEL SHUT-OFF ROD (Diesel)

Push in for "Run" position.

Pull out to "Stop" engine.

LIGHTING CIRCUIT FUSE (Gas & Diesel)

Located under the hood service panel and to the lift rear section, near the battery, is a fuse holder containing a replaceable fuse for the protection of the lighting system. Two headlights, a rear-mounted work-transport light and an instrument panel light are standard equipment on MF 65 Tractors.

IGNITION—LIGHT SWITCH (Gasoline Tractors)

Off — All circuits open — Locks when key is removed.

Ign. — Ignition circuit closed — For starting and daylight operation.

Ign. — Lamps — Ignition and work lamps circuits closed for operation when tractor lights are needed.

Ign-All Lamp — Ignition, work lamp and panel lights circuits all closed for operation when panel lights and work lights are required.

Lamps Only — Ignition circuit open. Lamp circuits closed for use when engine is not running, but lights are needed.

STARTER BUTTON

Pushbutton type. Locate below Ign-Lamp switch. Push in to close circuit and operate starter.

STARTER—SAFETY MECHANISM (Gas & Diesel)

As a safety feature, the dual range shift lever must be in "neutral" position for the starter to operate.

CHOKE (Gasoline)

Pull type. Pull out to "choke". Push in to "run".

THROTTLE LEVER (Gas & Diesel)

Located right side under steering wheel. Pull down for acceleration. Push up for deceleration and idle.

AMMETER (Gas & Diesel)

Indicates rate of battery charge or discharge. Does not indicate generator output. Hand should normally point to "+" side of gauge.

OIL PRESSURE GAUGE (Gas & Diesel)

Indicates amount of oil pressure and not the quantity of oil in the system. The needle should point to "Green" for normal operation. If the needle points to the "Red" area, it indicates that the oil pressure is too low. The cause of this trouble should be immediately determined and corrected.

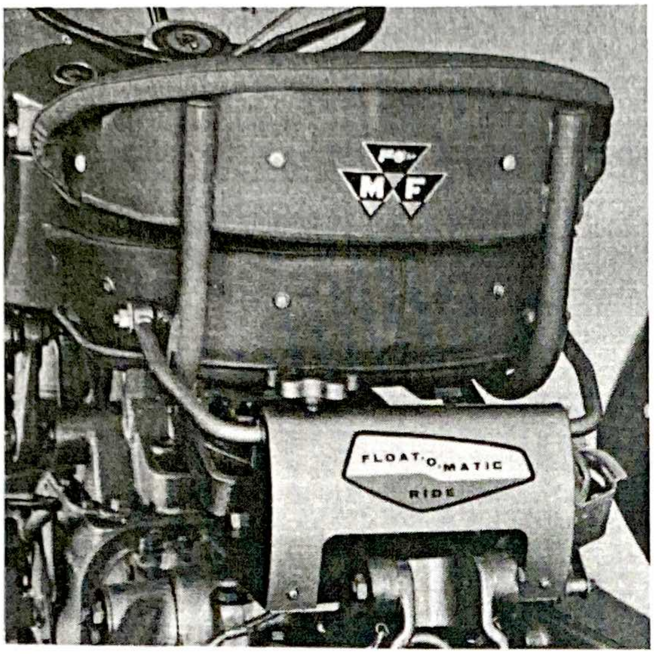


Fig. 5 – Float-O-Matic Ride Seat

TEMPERATURE GAUGE (Gas & Diesel)

The temperature gauge is divided into three sections. The white section or "cold" temp, the Green section - normal, and the Red or "hot" section. It shows the engine internal water temperature. The Green-Normal-area is the operating area. The White-Cold-area is unfavorable and the engine should be allowed to idle and pass beyond this area to the Green-Normal-area before operating the tractor. The Red-Hot-area indicates the engine is not being properly cooled and serious damage could result from continued operation. Therefore, when the indicator needle points to the Red-Hot-area, the tractor should not be operated until the cause has been determined and corrected.

TRACTORMETER (Gas & Diesel)

Top scale shows miles-per-hour for 6 forward gears, bottom shows engine RPM with standard belt and PTO speeds marked. Window shows accumulated hours of operation at average 1580 RPM

"FLOAT-O-MATIC RIDE" SEAT

The new spring suspension seat greatly improves operator comfort and safety. The coil torsion spring and shock absorber efficiently damps out the ride roughness.

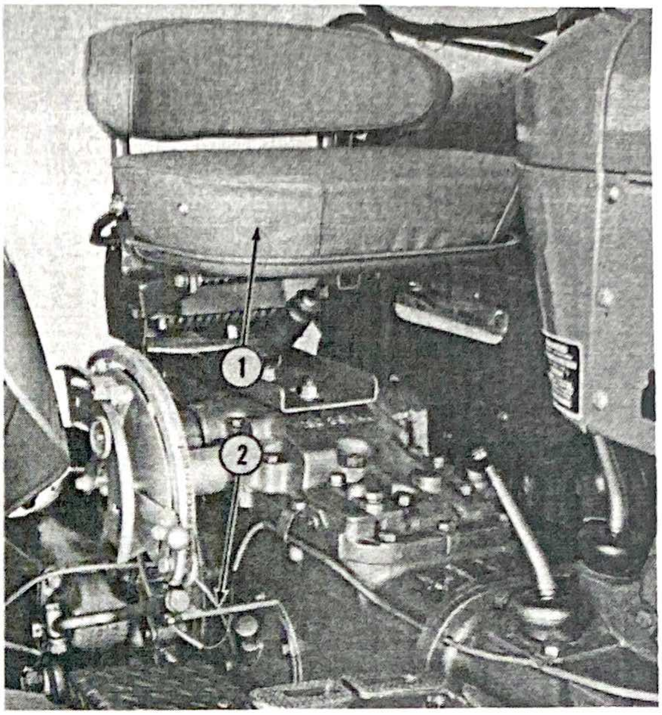


Fig. 5a – Seat and Differential Lock Pedal-Sitting Position
1. Seat 2. Differential Lock Position

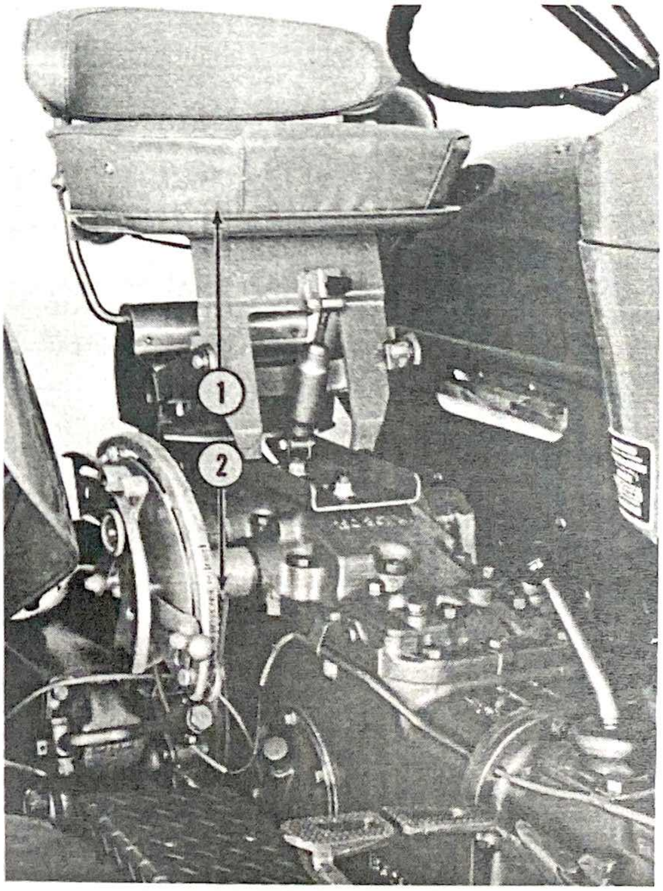


Fig. 5b – Seat and Differential Lock Pedal-Standing Position
1. Seat 2. Differential Lock Position

The seat has two positions, one for the operator to be seated and the other allows ample room for the operator to stand.

The knob at the back of the base plate permits an adjustment, from 100 lbs. to 250 lbs. This adjustment maintains a uniform operator position, regardless of weight.

This provides better visibility and handling ease, which, in many cases, permits tractor operation at higher speeds.

GEARSHIFT LEVER AND DUAL RANGE LEVER

The transmission gearshift lever provides 3 forward and one reverse speeds. The dual range lever provides a high and low speed for each transmission speed, thus, giving a total of 6 forward and 2 reverse speeds. The dual range lever must be in "NEUTRAL" position for starter operation.

MULTI-POWER TRANSMISSION

The Multi-Power transmission provides 12 forward and 4 reverse speeds. This wide range promotes greater efficiency in all operations.

Multi-Power provides a shift-on-the-go advantage. This can be done without clutching. Simply move the shift lever up for high range and down for low range.

OPERATING PRINCIPLES

1. Starting or stopping the tractor — Multi-Power lever may be in either high or low position.

2. The Multi-Power lever can be moved without disengaging the clutch.

3. Multi-Power engages at the same speed regardless how fast the lever is moved. Always move lever all the way up or down.

4. Disengage the clutch only when you move the gearshift or dual range lever.

5. Multi-Power may be operated continuously in high or low range.

6. For engine breaking while coming downhill, shift the M-P lever to "High".

7. The Multi-Power transmission has an overrunning characteristic which prevents the tractor from being started by towing or pushing.

8. Parking:

   a. Set the parking brake.

   b. Put tractor in gear:
      (a) First gear — facing uphill;
      (b) Reverse gear — facing downhill.

   c. Put dual range lever in "Low". M-P lever may be in "High" or "Low".

9. The M-P transmission has a "hill-hold" characteristic. When pulling uphill with the M-P in "High", depress the clutch pedal through the first stage, only - the hill-hold will prevent the tractor from rolling backward. Hill-hold applies in both forward and reverse.

10. If there is difficulty shifting gears on hills, move the M-P lever to "Low".

11. Multi-Power transmissions are adjusted at the factory. If operating difficulties occur, call your authorized M-F Dealer.

12. Lubrication: Use straight mineral oil in the Multi-Power transmission — SAE 90 above 50° F, SAE 80 below 50° F. Drain after the first 50 hours of operation and at 750-hour intervals thereafter.

OPERATION

DIFFERENTIAL LOCK

A mechanically actuated differential lock is factory-installed *standard* equipment on all diesel tractors and factory-installed *optional* equipment on gasoline models.

The purpose of the differential lock is to lock the differential so that both rear wheels rotate together to aid in getting through slippery spots where there is poor traction, especially on one wheel.

To engage the differential lock, simply flip the pedal pad to the horizontal position and depress the pedal. The lock will engage when the notches in the adapter and the lock are perfectly aligned, therefore, the axle cannot always be engaged when the tractor is not moving. The lock should be fully engaged when the pedal is between 1/16" and 1/4" above the step plate.

GROUND SPEEDS

STANDARD MULTI-POWER
12–28 Tires

St. Trans.	Dual Range	Multi-Power	1500 RPM	2000 RPM
1	L	L	.93	1.2
1	L	H	1.2	1.6
2	L	L	1.4	1.9
2	L	H	1.8	2.5
3	L	L	2.6	3.4
3	L	H	3.4	4.5
1	H	L	3.7	5.0
1	H	H	4.9	6.5
2	H	L	5.6	7.4
2	H	H	7.3	9.8
3	H	L	10.3	13.7
3	H	H	13.5	17.9
Rev.	L	L	1.3	1.7
Rev.	L	H	1.7	2.3
Rev.	H	L	5.1	6.8
Rev.	H	H	6.7	8.9

STANDARD MODEL
12–28 Tires

St. Trans.	Dual Range	1500 RPM	2000 RPM
1	L	.94	1.25
2	L	1.40	1.87
3	L	2.58	3.44
1	H	3.75	5.00
2	H	5.63	7.50
3	H	10.32	13.77
Rev.	L	1.28	1.70
Rev.	H	5.11	6.82

The pedal pad may be moved to a vertical position to permit more leg room when a standing position is desired by the operator.

> *CAUTION: The differential lock should not be engaged at high tractor speed or high engine RPM. This could cause a misaligned bending and seriously damage the locking mechanisms, necessitating costly repairs.*

CLUTCH PEDAL

Dual clutch control. Depress 1st stage, stops tractor - PTO and Hydraulic continue to operate. Depress 2nd state - Stops PTO and hydraulic system, as well as tractor motion.

BRAKE PEDALS

The brake pedals are so positioned that they may be applied singularly or together with equal ease.

Parking Latch — Is attached for operation with the inside, left pedal. It holds the tractor when parked.

QUADRAMATIC CONTROLS

(See Hydraulic System Operation)

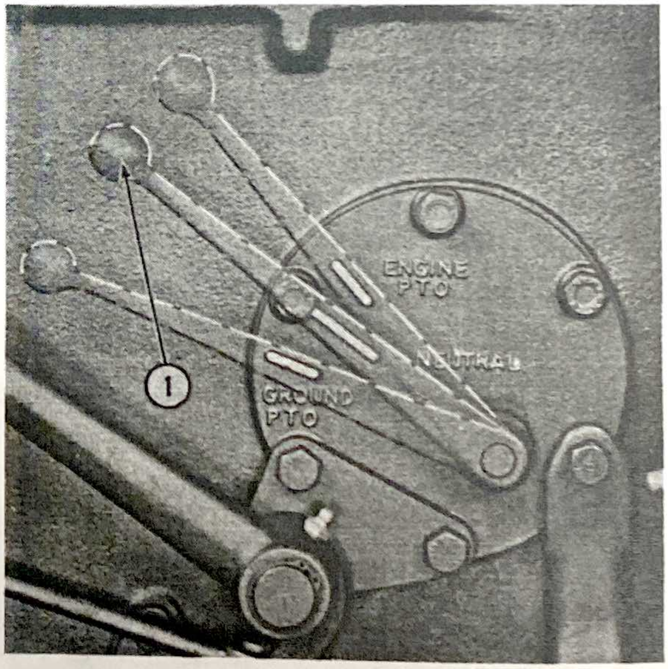


Fig. 6 – Power Take-Off Control
1. Shift Lever

POWER TAKE-OFF SHIFT LEVER

The PTO shift lever has three positions, as marked on the case: (1) Neutral, (2) Engine speed PTO operation, and (3) Ground speed PTO operation.

PROPORTIONAL ENGINE SPEED

The PTO shift lever moved to "Engine Speed" will cause the power take-off shaft to operate in direct relation to engine RPM, based on the rate of 540 PTO RPM to 1700 Engine RPM.

The dual clutch feature enables the operator to stop the forward motion of the tractor, without stopping the PTO or hydraulic system operation, by depressing the clutch to the first stage, only. Pushing the clutch pedal all the way down stops the tractor movement, and the PTO and the hydraulic system operation.

PROPORTIONAL GROUND SPEED

The PTO shift lever, shifted to "Ground Speed", will cause the PTO to operate the implement in proportion to the implement ground speed. This will produce one revolution of the PTO shaft to approximately twenty inches of ground travel, regardless of the tractor engine RPM or gear used.

> *CAUTION: The tractor should never be reversed with the PTO in "Ground Speed". It would cause the implement to rotate backward and could result in serious breakage.*

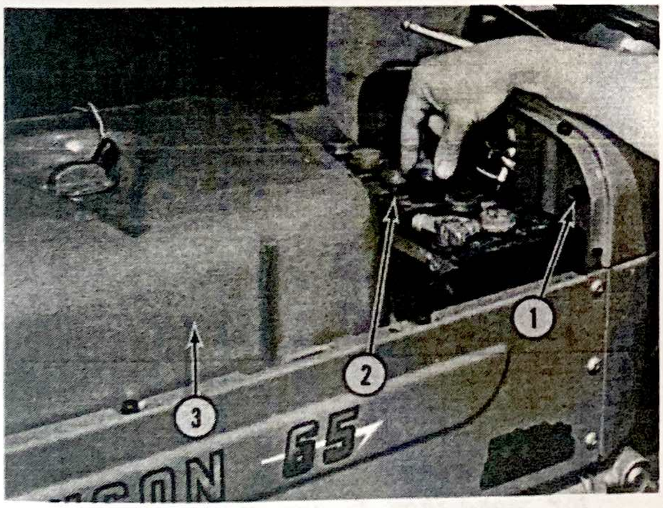


Fig. 6a – Hood Service Panel

1. Lighting Circuit Fuse 2. Battery, 12 Volt 3. Fuel Tank, 17 Gal.

HOOD SERVICE PANEL

The tractor hood is hinged and held closed by two latches on the left side. Turning the latches up and forward releases the panel.

Upon raising the panel, the radiator, 12-volt battery, lighting circuit fuses, and the 17-gallon gas tank are accessible for service.

GRILLE SERVICE DOOR

The right side of the tractor grille is hinged and secured in position by two thumb screws. Loosening the thumb screws and opening the door provides accessibility to service the air cleaner bowl, the radiator core, upper steering pedestal and the power steering assembly.

The left side of the grille is removable (by raising the hood and lifting the panel up) to facilitate servicing when front-mounted implements are being used.

STEP PLATES

The extra-large, rectangular step plates have a 4-way, non-skid pattern embossed in the surface for operator's safety.

DRAWBAR

The universal swinging drawbar is standard equipment on the MF 65. It may be set in two positions for length. The forward position provides 14 inches distance from the drawbar hole to the PTO shaft. The rear position provides the same distance to the PTO extension. It may be moved forward, permitting use of closely coupled mounted implements.

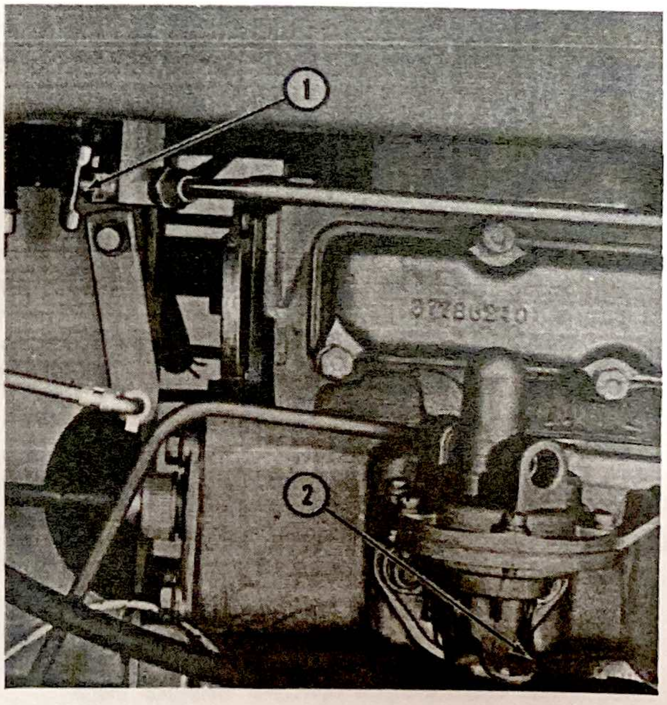


Fig. 7 – Fuel

1. Fuel Shut-Off Valve 2. Primary Fuel Pump Manual Lever

FUEL SHUT-OFF VALVE

Turn to the left to open the main fuel supply. Completely right shuts off fuel supply.

BREAK-IN PROCEDURE

The break-in period of your tractor is very important. Follow these suggestions for best results.

1. During the first 25 hours of the break-in period, run your engine under normal load, at recommended governor speed and normal operating temperature. Avoid continuous light load or low engine RPM.

2. For plowing or other similar heavy load operations, use next lower gear than would normally be used, to prevent lugging and overloading.

3. During this period, vary the load by shifting to a higher gear for short intervals to bring the engine up to full load.

4. Change the crankcase oil after the first 50 hours of operation.

5. Change the transmission oil after the first 50 hours of operation.

6. Frequently check all nuts, bolts and screws to maintain tightness.

7. Frequently check all adjustments and maintain, as recommended.

STARTING THE TRACTOR

Sit in the seat and become familiar with the controls. Place your hands on the wheel and your feet on the clutch and brake pedals. Notice the location of all the instruments and controls.

WARNING: Diesel exhaust gases are very poisonous. Never run the tractor engine in a closed building.

STARTING THE DIESEL TRACTOR— NORMAL TEMPERATURES

1. Open the fuel shut-off valve, just below the fuel tank outlet.

2. Move the fuel shut-off rod to forward position.

3. Move the throttle lever to the 1/4-1/2 open position.

4. Disengage clutch — pedal fully down.

5. Place dual range lever in neutral position to close the transmission neutral safety switch.

6. Turn the starter switch key clockwise to start position. When the engine starts, immediately release the key and move the throttle to 1/4 open position.

> *NOTE: If the engine fails to start after 15 seconds of cranking, proceed with the cold starting method.*

COLD STARTING PROCEDURE

1. Open fuel shut-off valve located in the fuel line just below the tank outlet.

2. Move the fuel shut-off control rod to the forward "open" position.

3. Move the throttle lever to 1/4-1/2 open.

4. Disengage clutch by pushing all the way down.

5. Place Dual Range lever in neutral position.

6. Turn switch key counter clockwise to "Heat" position and hold for approximately 10 seconds.

7. Turn switch key further, counter-clockwise to "H-S", Heat-Start, position and hold till engine starts.

> *NOTE: Do not keep starter running for more than 15 seconds at a time. To do so, puts an undue strain on the battery circuit and may overheat the starting motor.*

8. If the engine fails to start after 15 seconds of cranking, return the key to the heat position for 10 seconds and, then, return it to the "H-S" (Heat Start position) for a second cranking.

> *NOTE: Should air enter the system due to unexpected emptying of the fuel*

tank or from other causes, the system must be "air-bled" before an attempt is made to start the engine. The "air-bleeding" procedure of the fuel system is described in the servicing section.

9. Do not "rev-up" or race the engine immediately after starting. Cold oil cannot circulate freely to all moving parts.

CAUTION: If engine fails to start, do not re-engage starter motor during engine "rock back" to avoid damage to the starter motor.

Allow the engine to reach its normal operating temperature before working the tractor. During lower temperatures, the oil pressure gauge will register a higher pressure. When this condition exists, the engine should be run at the idle speed until it warms up and the oil pressure indicator registers normal.

WATCHING THE INSTRUMENTS

Familiarize yourself with the normal readings of all gauges. Make it a habit to check the readings frequently during operation. If one or more have an abnormal reading, immediately shut the tractor down, determine the cause and repair the trouble. Failure to do so can cause more serious and costly repairs and time loss.

STARTING THE GASOLINE TRACTOR

CAUTION: Carbon monoxide (exhaust fumes) is a killer. Never operate the tractor engine in a closed building

1. Turn the ignition key to "Ign" position.

2. Open throttle 1/8 to 1/4.

3. Depress clutch pedal entirely.

4. Place dual range lever in neutral position.

5. Pull out choke and hold.

NOTE: If engine is hot, it may not be necessary to move choke control.

6. Press starter button - release when engine starts.

7. Release the choke when the engine runs smoothly.

8. Do not race a cold engine. Cold oil cannot circulate freely to all moving parts.

9. Allow the engine to reach normal temperature before working the tractor.

DRIVING THE TRACTOR

1. Start the engine.

2. Depress the clutch pedal and move the dual range lever and gearshift lever to desired positions.

3. Release the brakes.

4. Open throttle slightly and slowly release the clutch.

CAUTION: Be sure the steering wheel is positioned so as to guide the tractor away from any object.

5. Increase throttle setting until desired speed is reached.

NOTE: Do not allow feet to rest on either clutch or brake pedals. This will cause excessive wear.

SELECTING THE CORRECT GEAR

Three important factors in selecting a working gear are:

1. Designed speed of the implement.

2. Field conditions.

3. Tractor performance.

A good torque characteristic enables your MF 65 to lug through tough spots without throttle or gear changes. Choose gears so that the engine does not lug excessively.

CAUTION: Continued overloading (or lugging) causes overheating and excessive engine wear. Continued engine racing under light loads causes poor fuel economy.

TEST FOR OVERLOADING

With the tractor moving, set the throttle half way open. Quickly pull throttle wide open. If the engine picks up speed slowly, shift to a lower gear.

> *NOTE: Never allow anyone, especially youngsters, to ride anywhere except on the tractor seat.*

STOPPING THE TRACTOR

1. Depress the clutch pedal while retarding the throttle.

2. Apply *both* brakes, as needed, to stop.

3. Put gearshift and dual range levers in neutral position.

4. Lock the toe-trip parking latch.

5. Stop the engine. Turn ignition switch key "off" on gas engines. Pull fuel shut-off rod out on diesel engines.

> *CAUTION: Use extreme care in applying brakes on a moving tractor. Individual wheel braking causes excessive tire wear and could cause loss of steering control.*

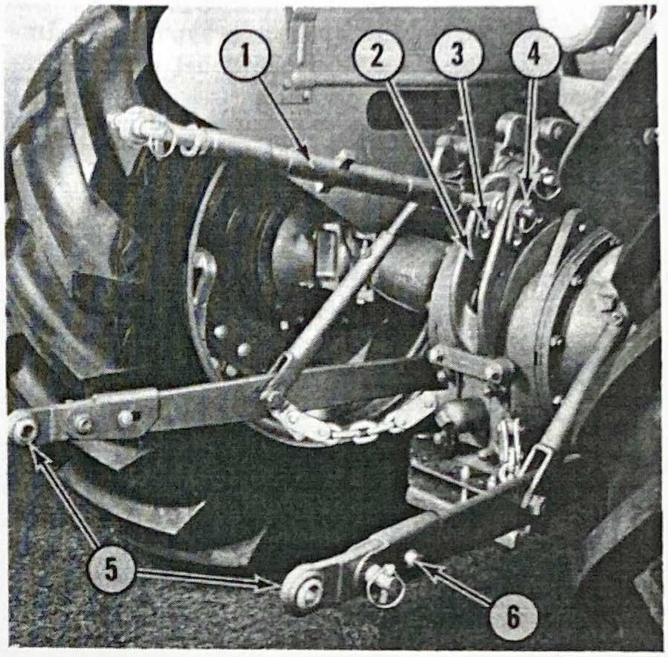


Fig. 8 – Hydraulic Lift Linkage

1. Adjustable Upper Link
2. Control Beam
3. Upper Link Position for Hi-Clearance Tractors
4. Upper Link Position for Standard Model Tractors
5. Wrist Action Ball Ends
6. Lock Pin

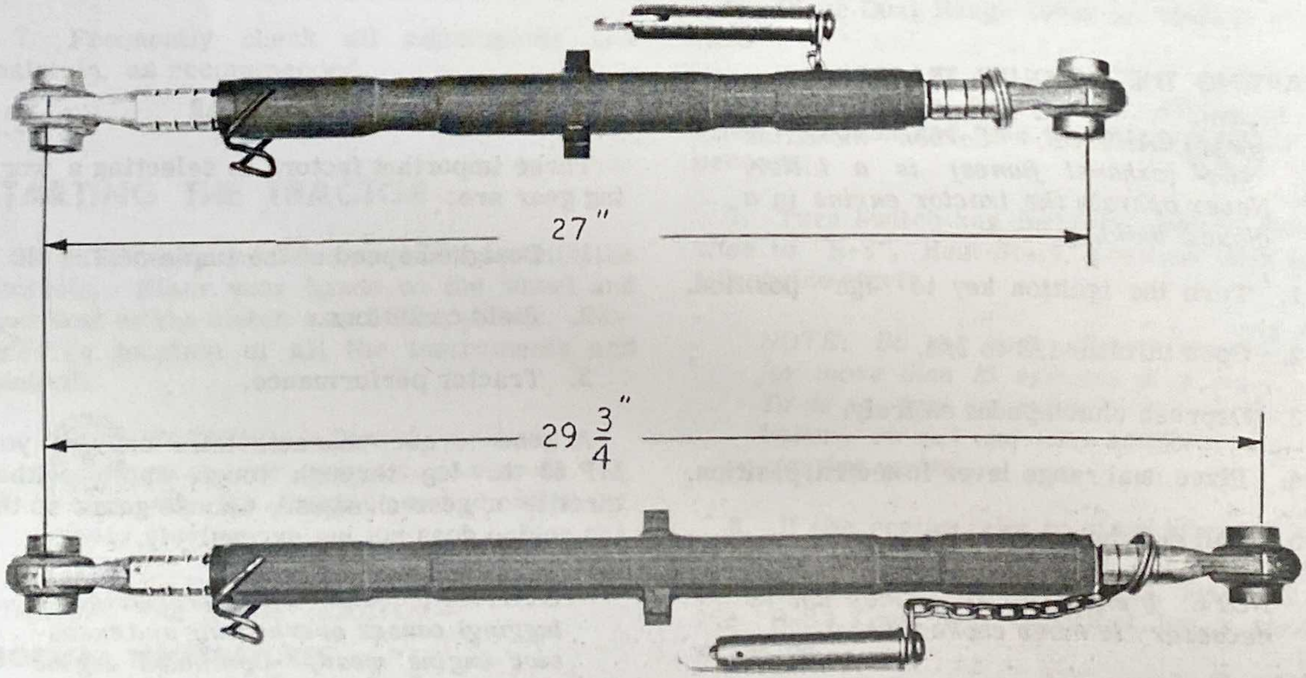


Fig. 9 – Upper Links

ATTACHING AND DETACHING MOUNTED IMPLEMENTS

The exclusive M-F hydraulic system combines your tractor and implement into a closely-coupled working unit. Quadramatic controls provide complete implement regulation at your finger tips. Attaching implements to the three-point linkage is fast and easy.

1. Back the tractor to the implement; keep the lower links lined with the implement hitch pins.

2. Position the lower links all the way down.

3. Attach left lower link, secure with linch pin. Attach right lower link (using leveling crank, if necessary, to align lower link and implement pin).

4. Attach upper link (unlock and turn center section, as necessary).

5. Adjust upper link to correct length.

6. Attach the upper link to the top hole of the tractor control arm on standard clearance models. Attach it to the lower holes on high clearance models.

UPPER LINK LENGTH

There are two upper links available, but they are of different lengths. The shorter one is for standard clearance tractors and is adjustable from 24 to 30 inches. The normal working length is 27 inches. This length is set by turning the center portion (turnbuckle) until the deep groove at each end is exposed.

The longer link is for high clearance tractors. It is adjustable from 26-3/4 to 32-3/4 inches. The normal working length is 29-3/4 inches (the deep groove on each end exposed).

The adjustment of the upper link is to help in overcoming unusual field conditions or worn mounted implements.

TO DETACH IMPLEMENTS

1. Lower implement to ground level.

2. Detach upper link from tractor (unlock and turn center section, as necessary).

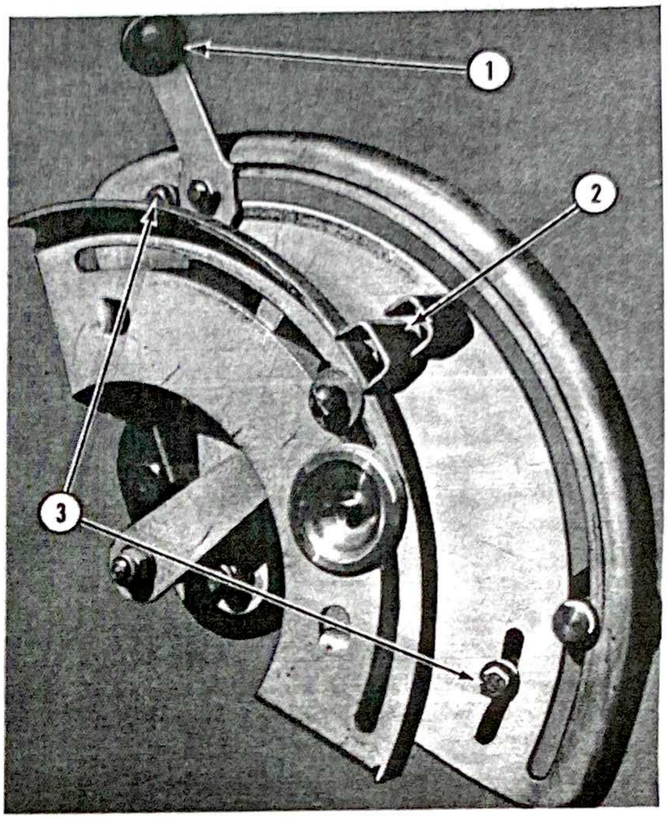


Fig. 10 – Quadramatic Controls

3. Detach right lower link (use leveling crank, if necessary).

4. Detach left lower link.

5. Secure lynch pins in clips.

HYDRAULIC SYSTEM

QUADRAMATIC CONTROLS

The advanced design of the M-F hydraulic system combines the tractor and implement into one working unit. The implement is hydraulically controlled. The range of control is extended to include:

1. Draft (depth) Control;

2. Response Control;

3. Position Control;

4. Overload Release (on tractors without transmission oil filter).

These services - apart from "Overload Release", which is automatic - are selected from the operator's seat by means of two conveniently located levers. The inside lever (with round knob) is the operational, position control and draft response control lever. The outside pair of levers are the draft control levers. They are used to select the depth of operation of soil penetrating implements.

The Operation Control Lever, No. 1, Fig. 10 (Hydralever), has 3 functions:

1. To raise and lower the attached implement.

2. To regulate the working position of the implement when "Position Control" is being used.

3. When placed in the lower portion of the quadrant and used with 'Draft Control", it will regulate the speed of the automatic up and down control, which is governed by the action of the master control spring as it actuates the internal hydraulic pump.

> *CAUTION: The stops, No. 3, Fig. 10, at either end of the operation control quadrant should not be moved by the operator. If the operator feels they need adjusting, he should call his authorized M-F Dealer. If these stops need changing, it could mean that an internal adjustment of the hydraulic system is also needed.*

THE DRAFT CONTROL LEVER

The draft control lever, No. 2, Fig. 10, is used to select and maintain the depth of soil penetration for mounted implements. It is to be locked, with the knurled nut, to the desired position. When soil conditions are extremely variable and the master control spring will not allow enough up and down control of the implement, the taller level of the draft control pair may be moved a short distance to assist the control of the master control spring.

> *NOTE: The M-F hydraulic system has only a single-acting (raising) force. The implement is caused to penetrate the soil by implement design and adjustment. To raise the implement, move the operational lever to top of quadrant. DO NOT MOVE DRAFT CONTROL LEVER.*

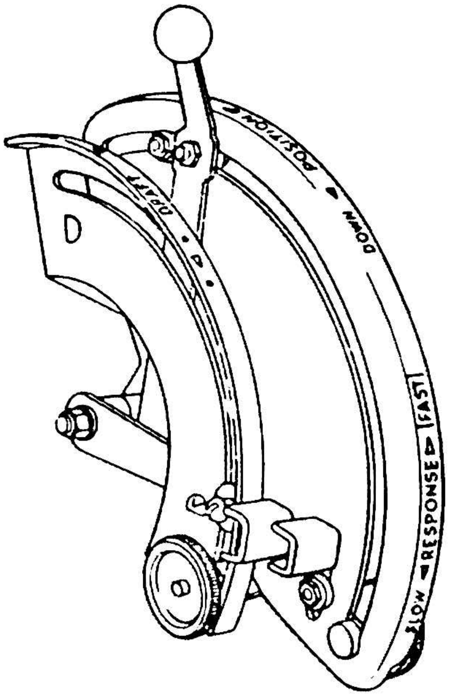
POSITION CONTROL

The draft control levers should be secured at the bottom of the quadrant. The Operational (Hydralever), then, is the only implement control. The distance from the ground, of the implement, is determined by the location of the Operational lever. The position of the lower links will correspond to the position of the Operational lever. When the Operational lever is at the top of the quadrant, the implement will be in the raised position. When the operational lever is just above the upper "Fast" range mark, the implement is in the lowered position. Any location of the Operational lever between these two points will give a different implement-to-ground clearance. Select the one you desire, then, move the knurled nut stop up to contact the operational lever and lock. Each time the Operational lever is returned to rest on the stop, the implement will have the same implement-to-ground clearance.

HYDRAULIC SYSTEM

Examples of Control Lever Settings

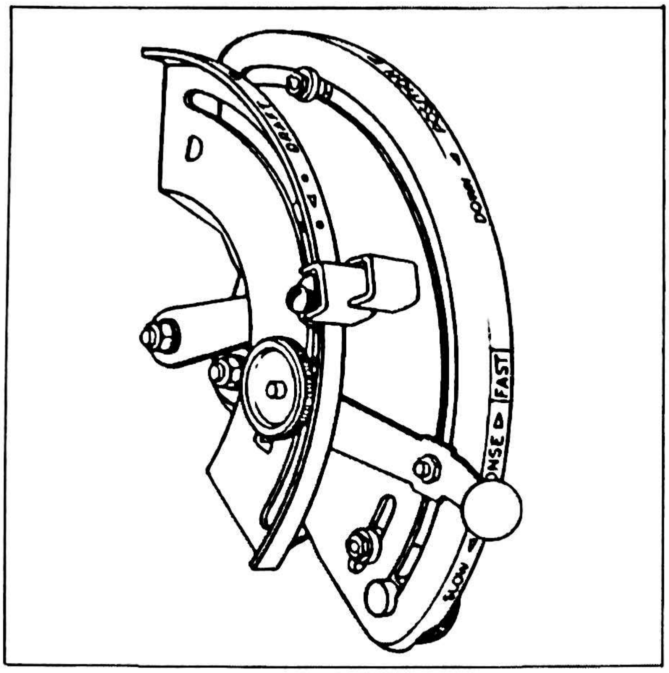
Transport Position



Raise *operational lever* to top of its quadrant. When transporting implement for a distance, *draft control lever* should be at bottom of its quadrant. To lift implement at end of a run leave *draft control lever* at chosen setting.

Fig. 11 – Transport Position

Normal Draft Work – Soil Engaging Implement

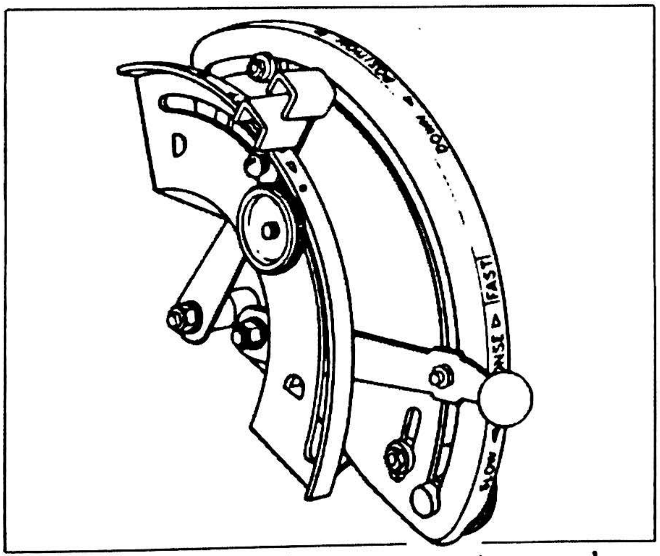


Operational lever in response sector according to response required.

Draft control lever below sector marks in bottom half of its quadrant according to depth required.

Fig. 12 – Normal Draft Work-Soil Engaging Implements

Shallow Draft Work — Heavy Implement



Operational lever in response sector according to response required.

Draft control lever above sector marks, in upper half of its quadrant, according to depth required.

Fig. 13 – Shallow Draft Work - Heavy Implements

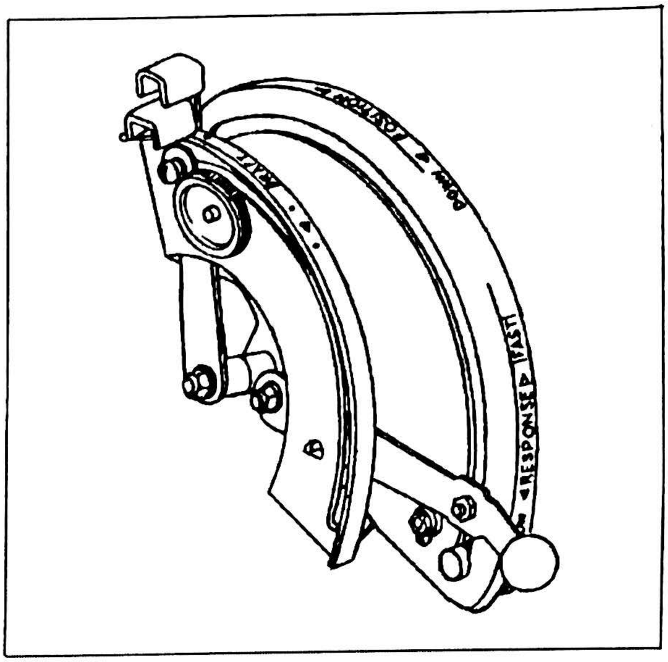


Fig. 14 – To Operate External Hydraulic Equipment, or to discharge the Safety Relief Valve (Without holding down lower links)

Transport Position

Raise Operational lever to top of quadrant. When transporting for a distance, *draft control lever* should be locked at bottom of quadrant. To lift implement at end of run, *leave draft control lever* at adjusted setting. Move Operational lever to top of quadrant.

Normal Draft Work-Soil Engaging Implements

Operational Lever in response sector according to response required.

Draft Control Lever below sector marks in bottom portion of quadrant according to depth required.

Shallow Draft Work - Heavy Implement

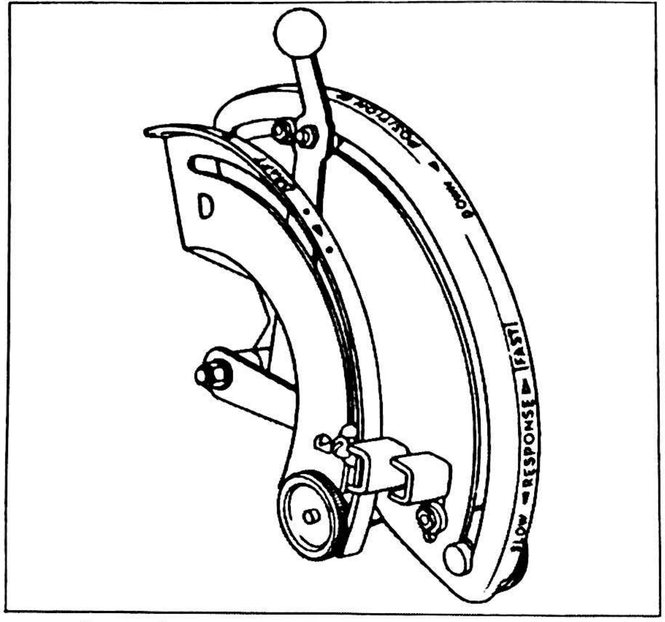
Operational Lever in response sector, according to response required.

Draft Control Lever above sector marks, in upper half of its quadrant, according to depth required.

To operate External Hydraulic equipment, or to discharge Safety Relief Valve (without holding down lower links):

Operational Lever in response sector, as required. *Draft Control Lever* in top-most position of quadrant.

Position Control – Soil Engaging Implements



Operational lever in position control range according to depth at which implement is required to operate.

Draft control lever at the bottom of its quadrant in maximum draft position.

Fig. 15 – Position Control - Soil Engaging Implements

Position Control - Soil Engaging Implements

Operational Lever - in position control range, according to depth at which implement is to operate.

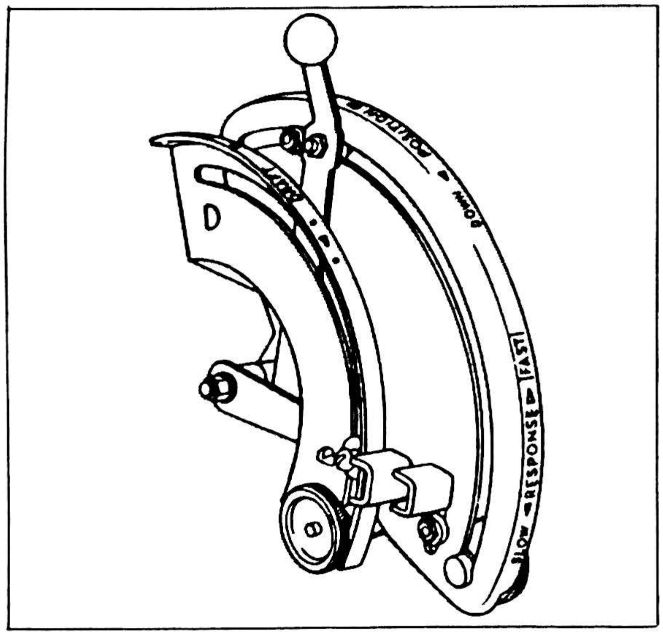


Fig. 16 – Position Control - Non Soil-Engaging Implements

Draft Control Lever at the bottom of quadrant, in maximum draft position.

Position Control - Non-Soil Engaging Implement

Operational Lever - in position control range, at height implement is to operate.

Draft Control Lever - at the bottom of quadrant, in maximum draft position.

EXTERNAL HYDRAULIC EQUIPMENT

Outlets are provided in the hydraulic lift cover for the use of external hydraulic cylinders to be used separately or in combination with the hydraulic lift.

External hydraulic control valves are usually installed, by removing the external transfer plate, when either single-acting or double-acting external hydraulic cylinders are to be used.

The owner has the choice of either a two-spool (control) or 3-spool valve. In operating external control valves, both the "Draft Control" and "Position Control" levers must be positioned at the top of their respective quadrants.

The left-hand external control valve may be locked back in the raise detent to return the system to conventional operation.

WHEEL TREAD WIDTHS

Your new MF 65 Tractor is so designed to make it simple and easy to adjust the tread width settings of both the front and rear wheels. The front wheels are mechanically adjusted. The rear wheel may be either mechanically or power adjusted.

> *CAUTION: It will be necessary to raise the tractor wheels off the ground when adjusting the front wheels, the rear wheels mechanically, or when the power-adjusted rear wheels' tread must be set beyond 72 inches.*

FRONT WHEEL WIDTHS

Front wheel widths of the MF 65 are adjustable from 48 to 72 inches with 4-inch settings by positioning the axle arms on the center axle.

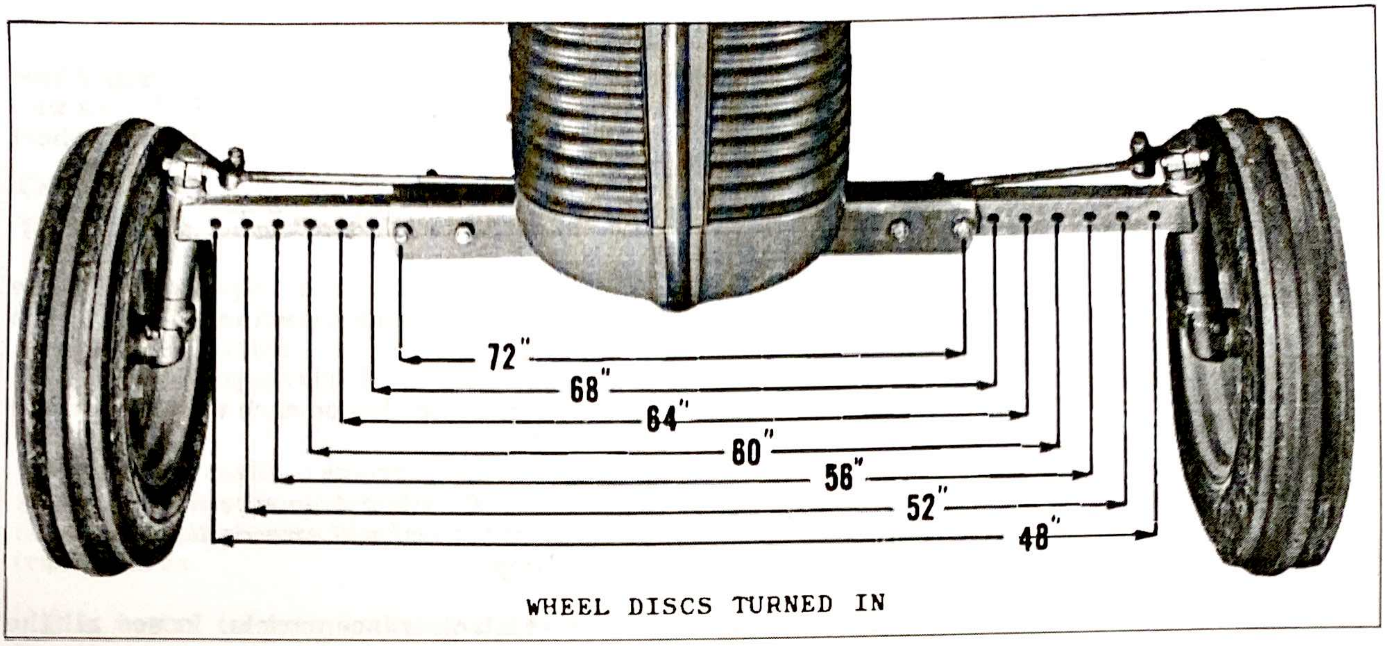

72"
68"
64"
60"
56"
52"
48"
WHEEL DISCS TURNED IN

Fig. 17 – Front Wheel Positions - Disc's Normal

An additional 8 inches (80-inch tread) may be obtained by reversing the wheel discs on the hubs. To adjust the tread width:

1. Place the accessory tractor jack in position and lift the tractor off the ground.

2. Remove the two bolts securing each front axle arm to the center axle. Loosen the tie rod setscrew.

3. Move the axle arms, with respect to the center axle, to obtain the desired tread width.

4. Adjust the tie rod until the bolt centers with the proper notch of the rod with the wheels straight ahead.

5. Replace the two bolts in each axle arm and tighten the bolt in the tie rod.

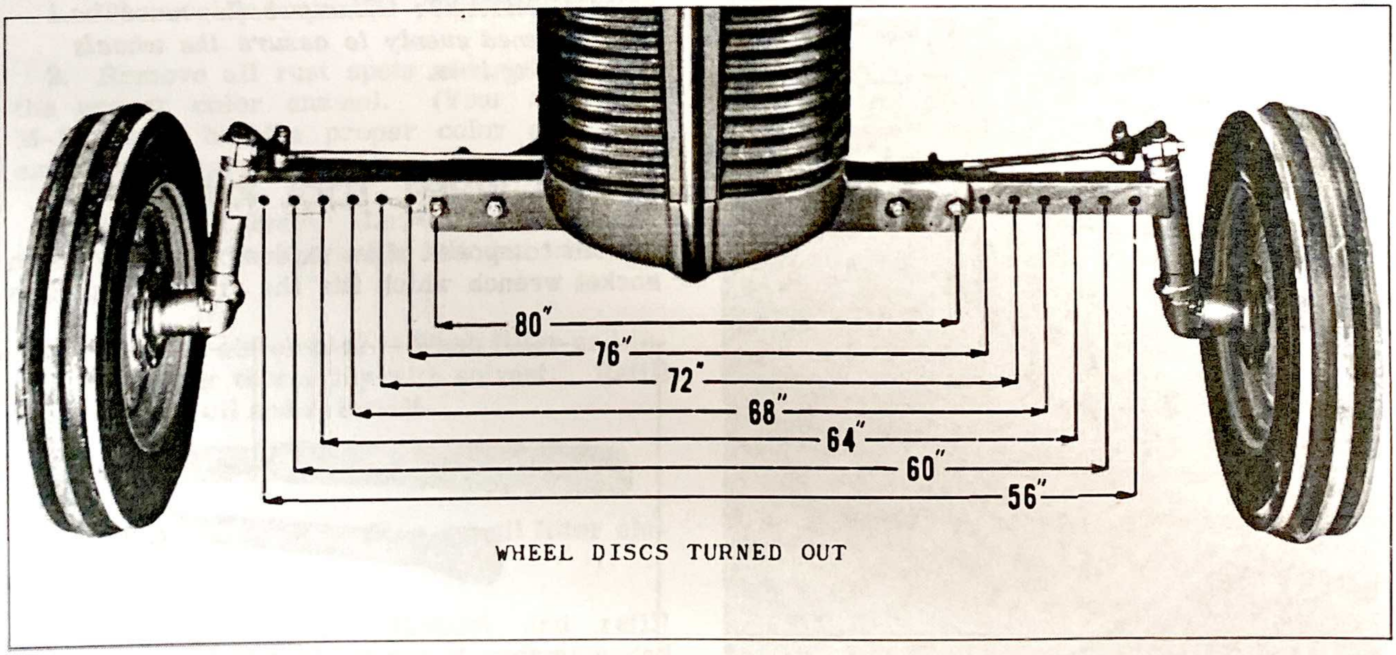

80"
76"
72"
68"
64"
60"
56"
WHEEL DISCS TURNED OUT

Fig. 18 – Front Wheel Positions - Disc's Turned Out

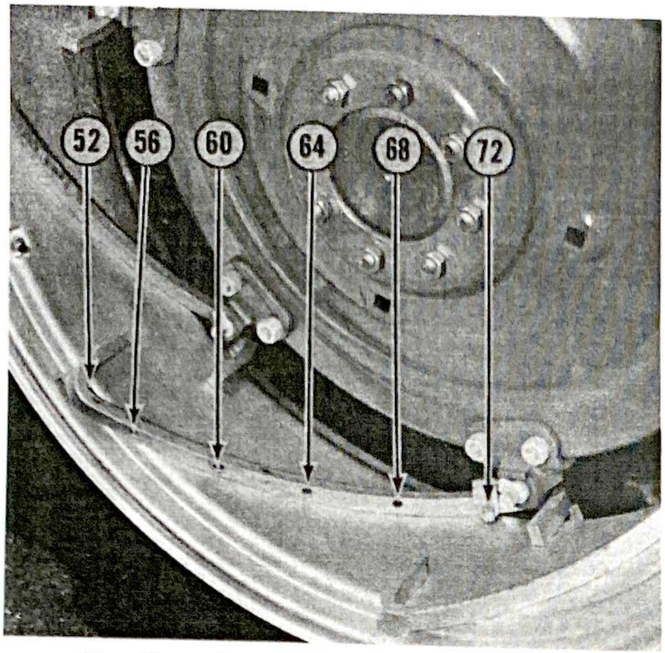


Fig. 19 – Rear Wheel Positions - Disc's Normal

CAUTION: When the front wheels are in the 76 or 80-inch settings, the front wheel bearings are subjected to greater strain and load. These tread widths should be used only when absolutely necessary, and never with front-mounted equipment.

REAR WHEEL WIDTHS

Power-adjusted rear wheels are standard equipment on your MF 65. These assemblies consist of special wheel discs and rims that provide a tread range from 52 to 88 inches with 4-inch spacings, or a total of 12 rear wheel settings.

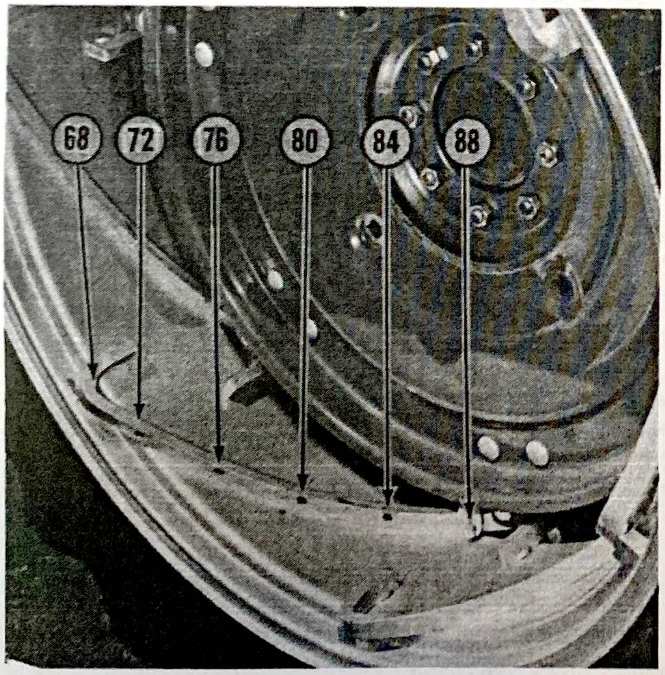


Fig. 20 – Rear Wheel Positions - Disc's Turned Out

To adjust the tread width:

1. Remove the two rim stopscrews and the rim stops which position each wheel disc to the rim.

2. Replace one stop on each wheel at the desired position.

   NOTE: On the extreme settings, the ends of the rail will provide the limiting stop.

3. On high clearance models, loosen all the eccentric pins on each wheel.

4. On standard clearance models, loosen the clamp bolts on each wheel.

5. Drive the tractor forward or backward until the wheel discs contact the stops on each wheel.

6. On high clearance models, tighten the eccentric pins on each wheel until the indicators are 90° to the right, starting at the bottom and working toward the top.

7. On standard clearance models, tighten all clamp bolts evenly.

   IMPORTANT: Clamp bolts must be tightened evenly to assure the wheels running true.

POWER WHEEL TOOL KITS

A kit composed of an extension handle and a socket wrench which fits the rim stop screws

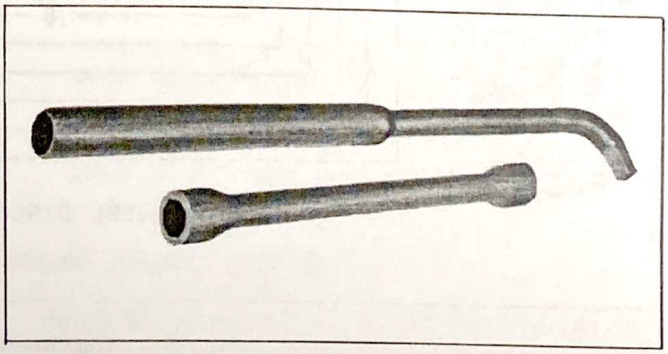


Fig. 21 – Power Wheel Tool Kit

and eccentric pins or clamp bolts is included as standard tractor equipment.

OBTAINING ADDITIONAL TRACTION

For certain operations or for difficult conditions, additional weight may be desired for additional traction. The accessory wheel weights were especially designed for this purpose.

They are easily removed for better fuel economy whenever the extra weight is not needed. Some owners prefer to liquid-fill the tractor tires.

It is better to use a calcium chloride solution than water; the freezing point is lower and the density (weight) is greater.

TRACTOR STORAGE—Diesel

When your tractor is to be idle for an extended period of time, it should be properly prepared. Store your tractor where it is protected from weather and livestock.

The following procedure has been outlined for the purpose of keeping your new MF 65 Tractor in the best working condition.

1. Thoroughly wash and clean the tractor.

2. Remove all rust spots and retouch with the proper color enamel. (Your authorized M-F Dealer has the proper color enamel in easy-to-use spray cans.)

3. Raise lift links. Leave in raised position to assure the hydraulic cylinder is full of oil.

4. Remove air cleaner. Wash filter and inside of cleaner thoroughly with solvent. Refill cup with new oil and reinstall.

5. Lubricate all pressure fittings.

6. Drain crankcase. Remove oil filter element.

7. Install new filter element and refill crankcase with proper amount of recommended oil.

8. Drain transmission, clean magnetic plugs, clean or replace hydraulic pump metal filter, and refill with proper amount of recommended oil.

9. Clean and repack front wheel bearings.

10. Check oil lever, add, if necessary, in steering gear housing and power steering unit.

11. Drain the fuel tank by removing the sediment bowl assembly and let tank drain dry. Clean the assembly and reinstall.

12. Remove both the first and second state filter elements. Clean filter case and install new filter elements.

13. Add two gallons of rust-proof oil, manufactured especially for diesel engines, to the fuel tank. Fill tank with clean fuel.

14. "Air-bleed" the fuel system.

15. Start the tractor and run at a fast idle for 15 minutes to insure that the rust inhibitor is in the entire fuel system.

16. Inspect the tractor for worn or damaged parts. Replace or order from your authorized M-F Dealer.

17. Drain the cooling system completely; wash and flush with washing soda and water.

18. Replace the radiator cap. Close the drain cocks, when system is dry, to keep the system clean.

19. Clean the radiator core.

20. Cover the ends of the exhaust and breather pipes.

21. Remove, inspect and condition the battery, as required; store in a cool, dry place (do not set on concrete or metal). Keep the battery in a fully charged state. Inspect every 2 weeks.

22. Jack up and block the tractor solidly to remove all weight from the tires.

23. Remove the water from the tires to prevent freezing. (Calcium chloride solution need not be drained.)

24. Cover the tractor with tarpaulin or other suitable cover.

NOTE: A special storm cover is available from your authorized M-F Dealer.

REMOVING THE TRACTOR FROM STORAGE

STARTING THE ENGINE

1. Install a fully charged battery. Make proper connections with negative ground.

2. Fill the cooling system with proper coolant.

3. Check the oil level in the crankcase, transmission, power steering and air cleaner.

4. Remove the coverings from the exhaust and breather pipes.

5. Inspect and tighten all nuts, bolts and screws.

6. Lubricate all fittings - remove excess grease.

7. "Air-bleed" the fuel system.

8. Start the engine. Fast idle for 15 minutes. Note all instruments - especially the oil pressure gauge - to be sure all parts are working properly.

9. Drive the tractor without load, and at slow speeds, noting the instruments and general operation.

TRACTOR STORAGE—Gasoline

It is just as important to properly store your gasoline tractor as it is your diesel. Always store your implement to protect it from weather, livestock, etc.

The following is a guide for gasoline tractor storage:

1. Thoroughly wash and clean the tractor.

2. Remove rust spots and repaint with the proper enamel. (The proper enamel may be obtained from your authorized M-F Dealer in easy-to-use spray cans.)

3. Raise lift links and leave in raised position to assure the lift cylinder is full of oil.

4. Remove air cleaner, wash filter and inside of cleaner thoroughly with a solvent. Refill cup with new oil and reinstall.

5. Lubricate all pressure fittings.

6. Drain crankcase and remove oil filter.

7. Install new oil filter element and refill with correct amount of recommended oil.

8. Drain transmission-differential, clean magnetic plugs, clean hydraulic pump filter; refill with proper new oil.

9. Clean and repack front wheel bearings.

10. Check oil level in steering gear housing and power steering assembly.

11. Drain fuel tank - completely - by removing sediment bowl assembly. Clean sediment bowl and assembly; reinstall.

12. Drain the carburetor.

13. Start the engine and bring to operating temperature.

14. Drain and flush the cooling system.

15. Clean radiator core.

16. Fill radiator with water-rust inhibitor-anti-freeze solution to prevent freezing. If anti-freeze is not desired, be sure cooling system is completely dry. Replace radiator cap. Close drain plugs to keep out dirt.

17. Cover the ends of the exhaust and breather pipes.

18. Remove, inspect and condition the battery, as necessary, and store in a cool, dry place (do not set on concrete or metal). Keep the battery in a fully charged state. Inspect every two weeks.

19. Jack up and block the tractor securely to remove the weight from the tires.

20. Remove the water from the tires to prevent freezing (calcium chloride solution need not be removed).

21. Cover the tractor with tarpaulin or suitable cover.

NOTE: A special storm cover is available from your authorized M-F Dealer.

REMOVING FROM STORAGE—Gasoline

1. Install a fully charged battery. Make proper connections with negative ground.

2. Fill the cooling system with proper coolant, if drained.

3. Check the oil level in the crankcase, transmission-differential, power steering and air cleaner.

4. Remove the coverings from the exhaust and breather pipes.

5. Inspect thoroughly and tighten all nuts, bolts and screws.

6. Lubricate all fittings; remove excess grease.

7. Start the engine. Fast idle for 15 minutes.

Note, carefully, all instruments - especially the oil pressure gauge - to be sure all parts are working properly.

8. Drive the tractor slowly, without load, and note all gauges and general operation.

TOWING THE TRACTOR

It is strongly recommended that the tractor be towed only when absolutely necessary. In order to assist the occasional operator who desires to tow his tractor safely, we offer the following suggestions:

1. Make sure the tow cable is securely and properly attached to both the tractor and the towing vehicle.

2. Shift the PTO lever, dual range lever and gearshift lever into neutral.

3. Start and stop the towing vehicle slowly and smoothly.

4. Towing speed should never exceed 20 miles per hour.

SERVICING

This section of the manual is intended as a guide for minor adjustments and repairs which are necessary from time to time. When a major overhaul or an adjustment other than the ones described in this section is necessary, call your authorized Massey-Ferguson Dealer. His full value service program, with trained personnel and special equipment, means true economy and lasting satisfaction for you.

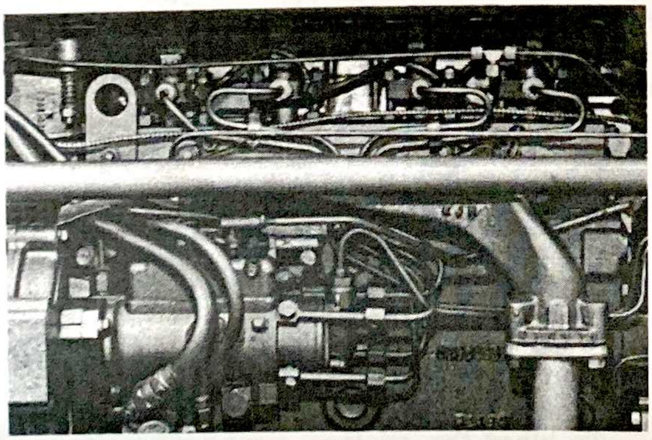


Fig. 22 – Diesel Engine - Swirl Type Injection - A4-203

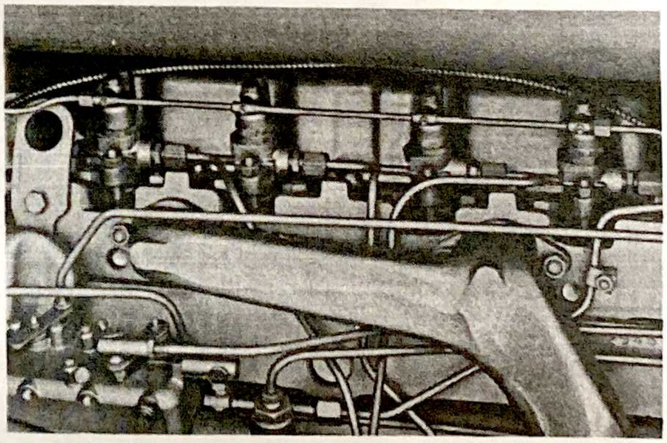


Fig. 23 – Diesel Engine - Direct Injection - AD4-203

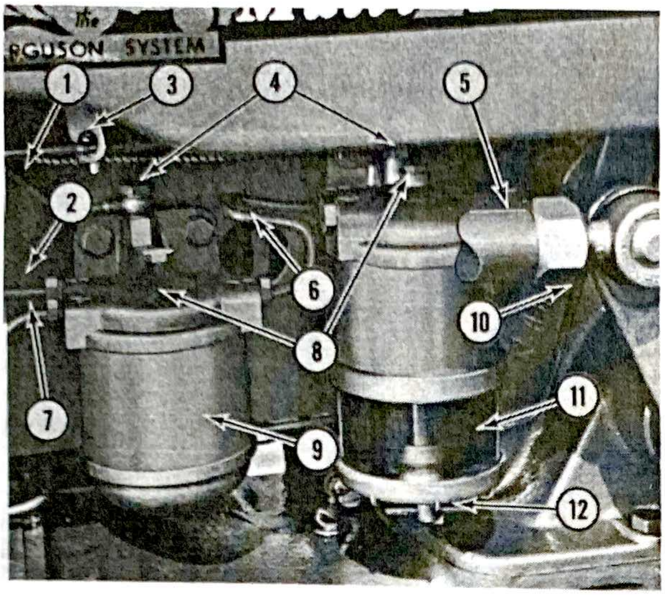


Fig. 24 – Fuel System - Diesel - Direct Injection

1. Fuel Overflow Line, Injectors-to Filter
2. Fuel Line - Secondary Filter-to-Pump
3. Fuel Shut-Off Rod
4. "Air Bleed" Vents, Fuel Filter
5. Primary (Agglomerator) Filter
6. Connection Fuel Line, Filters
7. Fuel Overflow Line, Pipe-to Filter
8. Center Bolts, Fuel Filter
9. Secondary Filter
10. Fuel Filter Line
11. Bowl
12. Drain Fitting

SERVICING THE DIESEL ENGINE AND ITS SYSTEMS

AIR-BLEEDING THE FUEL SYSTEM

In order for your tractor engine to function properly and efficiently, it is important that the fuel system be kept CLEAN and FREE FROM AIR. It will be necessary to air-bleed the fuel system if: (1) the fuel tank has been permitted to run dry, (2) the tractor is not used for a considerable period of time, (3) the sediment bowl is removed for cleaning, (4) the filters are drained or (5) any vent plug in the system opened.

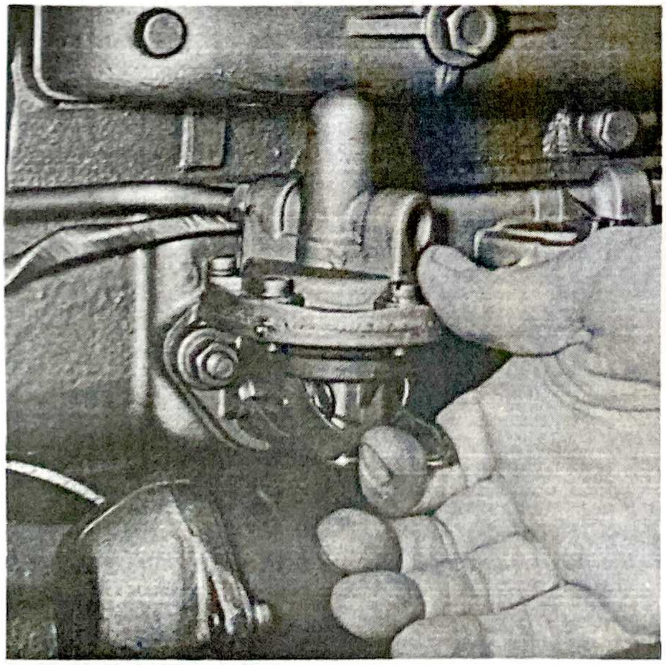


Fig. 25 – Manual Lever, Primary Fuel Pump

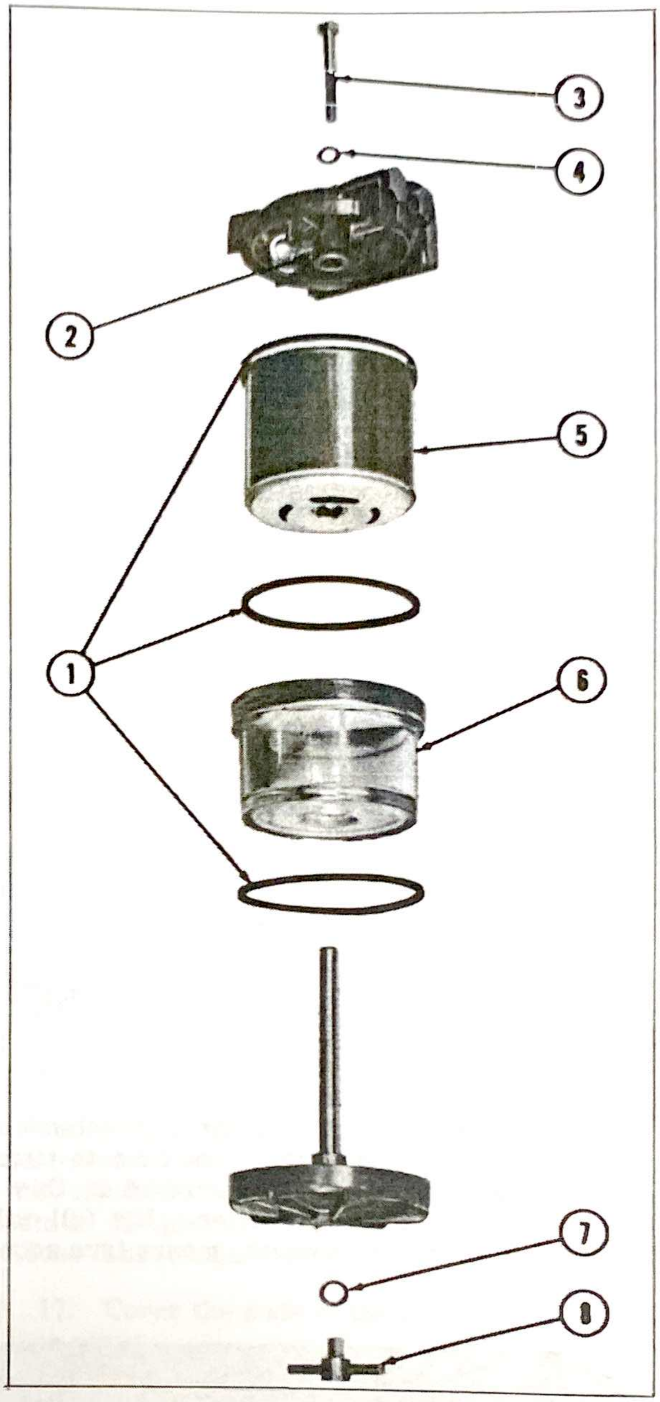


Fig. 24a – Primary Filter

1. Seals
2. "O" Ring Seal.
3. Center Bolt
4. Washer
5. Filter Cartridge
6. Bowl
7. Washer
8. Drain Fitting

To bleed the system, proceed, as follows:

1. Open the fuel shut-off valve.

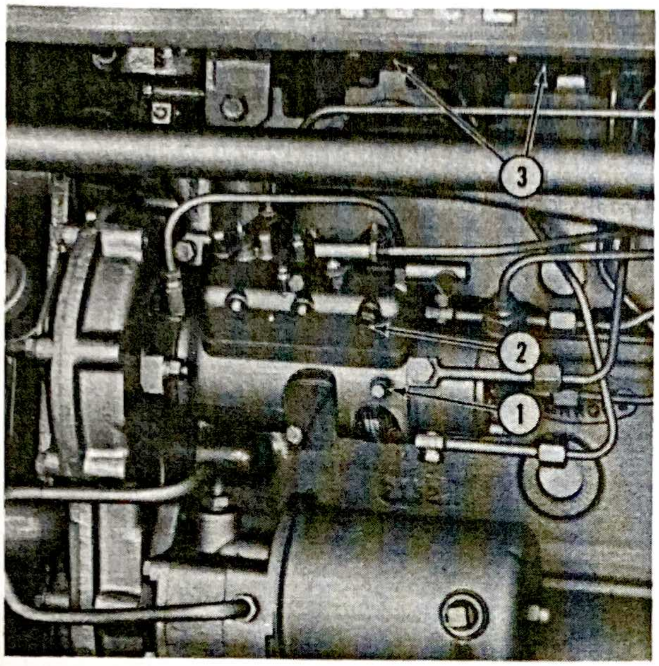


Fig. 26 – "Air Bleed" Points

1. Injection Pump, Lower
2. Injection Pump, Upper
3. Injectors, Fuel Line Connections

2. Loosen air-vent, No. 5, Fig. 24, on first stage filter.

3. Pump manual lever on the primary fuel pump (Fig. 25) until air-free fuel comes out of the filter vent. Tighten vent plug securely.

4. Loosen vent plug, No. 5, Fig. 24, on second stage filter, and operate the primary pump manual lever until air-free fuel comes out the vent. Tighten vent plug securely.

5. Loosen the lower vent plug, No. 1, Fig. 26, on the injection pump body and operate the primary pump manual lever until air-free fuel flows out the port. Tighten vent plug.

6. Loosen upper vent plug, No. 2, Fig. 26, on the injection pump body and operate the primary pump manual lever until air-free fuel flows out the vent. Tighten vent plug.

7. Operate the primary pump manual lever 10 additional times to insure that there is fuel in the bleed back lines to the second stage filter.

8. Loosen two pressure lines, No. 3, Fig. 26, to injector connections. Turn the engine over with the starting motor until fuel escapes from the pressure line ends. Tighten the two connections.

9. Turn the engine over with the starting motor until the engine starts.

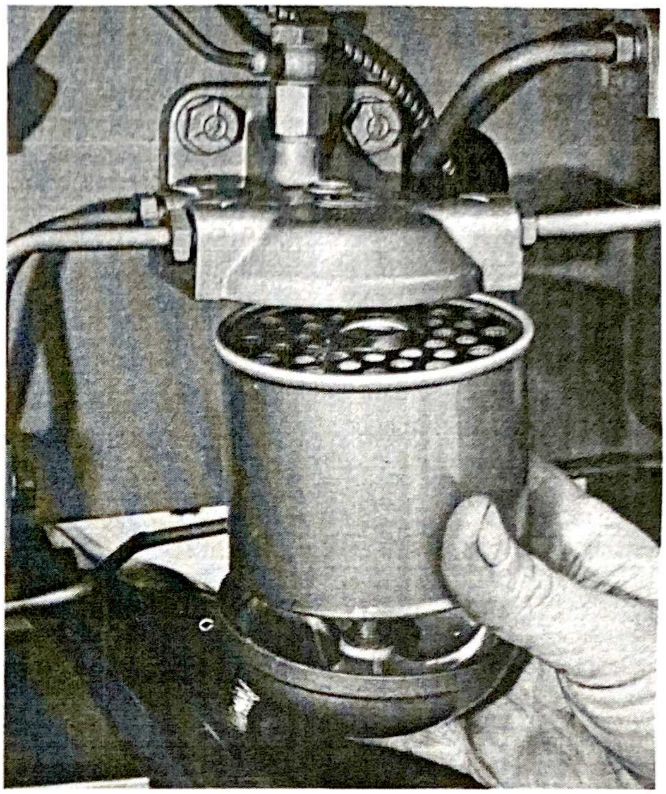


Fig. 27 – Servicing The Secondary Fuel Filter

NOTE: Do not operate the starter continuously for more than 15 seconds without allowing a few minutes for cooling. Failure to do this will cause overheating and premature failure of the starting motor.

REPLACING THE FUEL FILTER ELEMENTS

Before changing the fuel filter elements, turn off the fuel supply at the tank valve and clean the outside of the filter cases THOROUGHLY. Use only Massey-Ferguson fuel filter elements.

Primary Fuel Filter

1. Unscrew the center bolt and remove the filter bowl (Fig. 27).

2. Remove and discard the old element, clean filter bowl.

3. Reassemble with new filter element and new gasket.

4. Open the fuel shut-off valve and "air-bleed" the fuel system.

Secondary Fuel Filter

> *CAUTION: Practice extreme cleanliness when servicing the secondary fuel filter. Water and dirt must not be allowed to enter the injection pump from the secondary filter.*

1. Unscrew the center retaining bolt on top of the filter assembly and remove the filter element and base (Fig. 27).

2. Discard old element and thoroughly clean the sump in the filter base.

3. Using a new gasket, position the filter element onto its base and connect the base to the filter head with the center bolt (Fig. 27). Do not over-tighten the center bolt.

4. Open the fuel shut-off valve and "air-bleed" the system.

AIR CLEANER

The air cleaner is located in front of the radiator, behind the grille and above the pedestal. It may be reached by opening the hinged right section of the grille.

It is essential that it be kept clean and free from any type of restriction. A CLOGGED AIR CLEANER WILL RESULT IN LOSS OF POWER. Clean the oil cup daily - more often under extreme conditions - and refill to full mark with crankcase oil. Clean the air intake screen in front of hood, when needed. *NEVER OIL THIS SCREEN.* The internal filter is cleaned by removing the air cleaner and rinsing the assembly in a suitable solvent. This should be done at least twice a year - more often under dusty conditions.

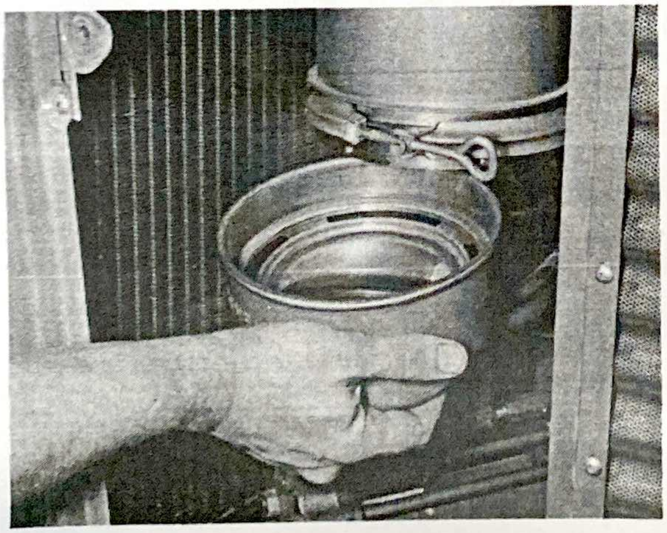


Fig. 28 – Servicing the Air Cleaner

> *CAUTION: Never use gasoline or volatile material for cleaning the air cleaner.*

GOVERNOR-ADJUSTMENT

Proper engine governor action is dependent upon: (1) proper functioning of the built-in governor within the injection pump, and (2) properly adjusted external linkage.

The only injection pump governor adjustment that can be made (the engine idle speed) is described in detail in this manual section.

> *CAUTION: The maximum engine speed is governed by the injection pump governor. The maximum speed stop screw length is factory pre-set and sealed. This seal should not be broken, for any reason. If pump governor difficulties should develop, call your local authorized M-F Dealer.*

Improper external linkage action may be caused by binding or excessive dirt accumulation. If this occurs, clean thoroughly and proceed, as follows.

Governor Adjustment (Idle)

1. Start the engine.

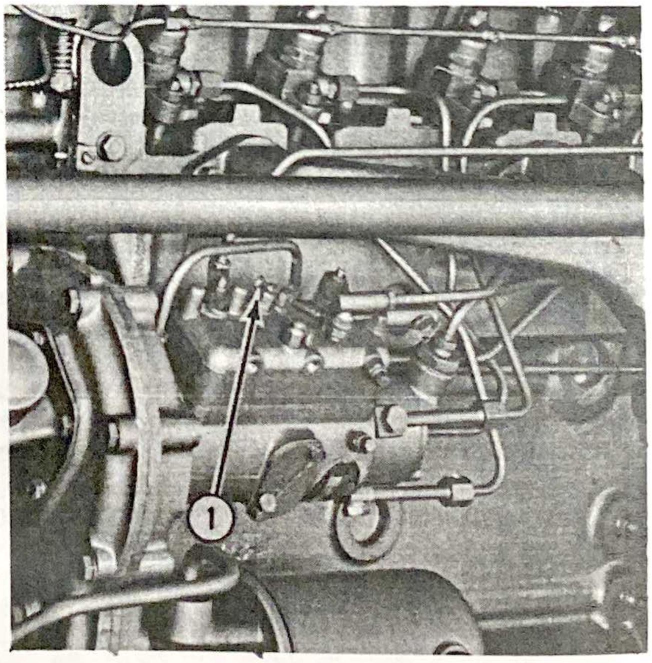


Fig. 29 – Idle Adjustment Screw

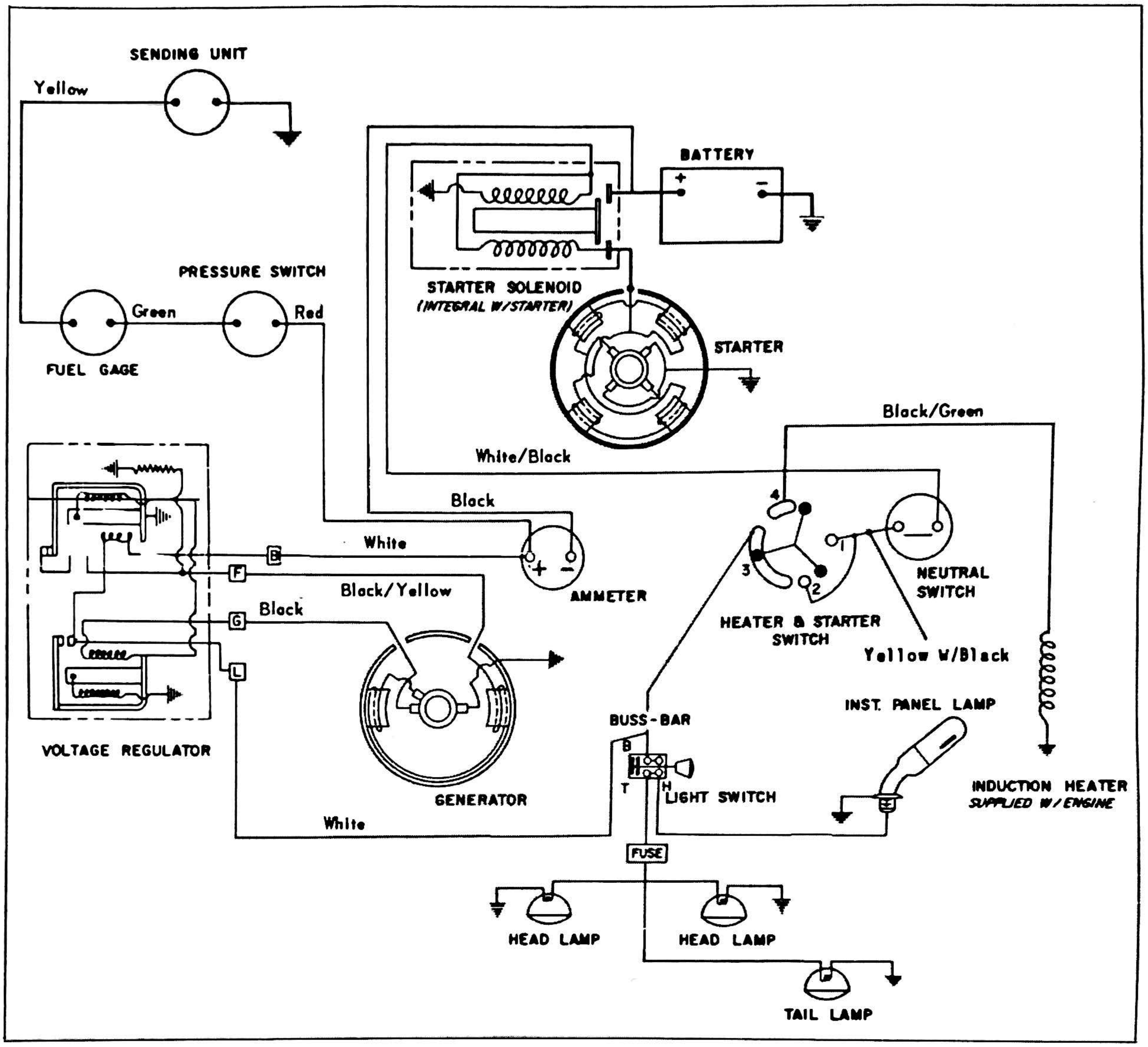

SENDING UNIT
Yellow
BATTERY
+
−
PRESSURE SWITCH
Green
Red
FUEL GAGE
STARTER SOLENOID
(INTEGRAL W/STARTER)
STARTER
Black/Green
White/Black
Black
White
B
F
G
L
Black/Yellow
Black
+
−
AMMETER
4
1
3
2
NEUTRAL SWITCH
HEATER & STARTER SWITCH
Yellow W/Black
INST. PANEL LAMP
BUSS-BAR
B
T
H
LIGHT SWITCH
INDUCTION HEATER
SUPPLIED W/ENGINE
VOLTAGE REGULATOR
GENERATOR
White
FUSE
HEAD LAMP
HEAD LAMP
TAIL LAMP

Fig. 30 – Electrical System - Diesel

2. Adjust the idle speed adjusting screw (No. 1, Fig. 29) counter-clockwise to decrease and clockwise to increase engine speed. The A4-203 engine should be set at 550-600 RPM. The AD4-203 (direct injection engine) should be set at 575-625 RPM.

To adjust governor linkage:

1. Stop the engine.

2. Loosen throttle control lever clamp bolt nut.

3. Place the throttle all the way up in the idle position, so that the throttle cam is against the stop on the bracket assembly.

4. Pull throttle control link forward to the idle speed position, so that the speed control lever just touches the idle speed stopscrew on the injection pump.

5. While holding the rod in this position, securely tighten the throttle control lever clamp bolt and nut.

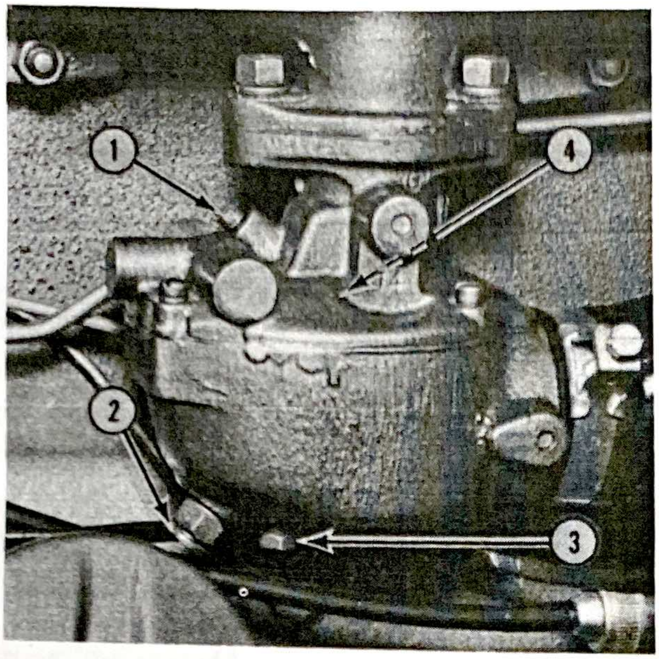


Fig. 31 – Carburetor
1. Idle Air Adjustment
2. Main Jet Adjustment
3. Drain Plug
4. Idle Speed Adjustment

ELECTRICAL SYSTEM—DIESEL TRACTORS

Do not attempt to repair or adjust the generator, voltage regulator, starter or starting aid. These assemblies are best serviced by trained personnel with adequate service equipment. Call your authorized Massey-Ferguson Dealer.

> *IMPORTANT: Never operate the engine with the generator lead disconnected.*

Battery

12-volt - 96 amp/hr. - negative ground.

SERVICING THE GASOLINE ENGINE AND ITS SYSTEMS

CARBURETOR

Idling-Air Adjustment, No. 1, Fig. 31 - Open the idling adjusting screw (1 to 1-1/4 turns) until the engine runs smoothly when warm.

Idling-Speed Adjustment, No. 4, Fig. 31 - Turn the adjusting screw to increase or decrease until an engine speed of 450 RPM is obtained.

Main Jet Adjustment, No. 2, Fig. 31 - Adjust the main jet by turning in the needle valve to fully closed position (not tight), then, opening 1 to 1-1/4 turns. Field test the tractor under normal load by quickly moving the throttle from 1/2 open to open position. If the engine coughs and stalls, open the jet 1/6 turn more and repeat the test.

> *NOTE: A mixture too lean reduces power, overheats the engine and may cause burned valves. Never set main jet less than one turn open.*

AIR SYSTEM

It is a good practice to heed the following precautions:

1. Service the air cleaner bowl daily (more often under dusty conditions).

2. Clean rubber inlet hose often.

3. At least twice a year, clean the internal filter with solvent; replace, if necessary.

4. Inspect hose connections and keep tight. Check all hose and tubes for cracks.

GOVERNOR ADJUSTMENT

The improved variable speed governor tends to maintain a pre-set engine RPM under varied loads. The internal mechanism should be taken to your local authorized M-F Dealer for service.

The external linkage may need on-the-job adjustment to compensate for wear.

Proceed, as follows:

Control Rod Length:

1. Fully open the throttle (engine stopped) to move the governor lever rearward to the wide open position.

2. Remove the pin from the clevis.

3. Hold the control rod and the governor lever rearward. Adjust the control rod length so that it must be moved forward 1/32 inch to insert clevis pin.

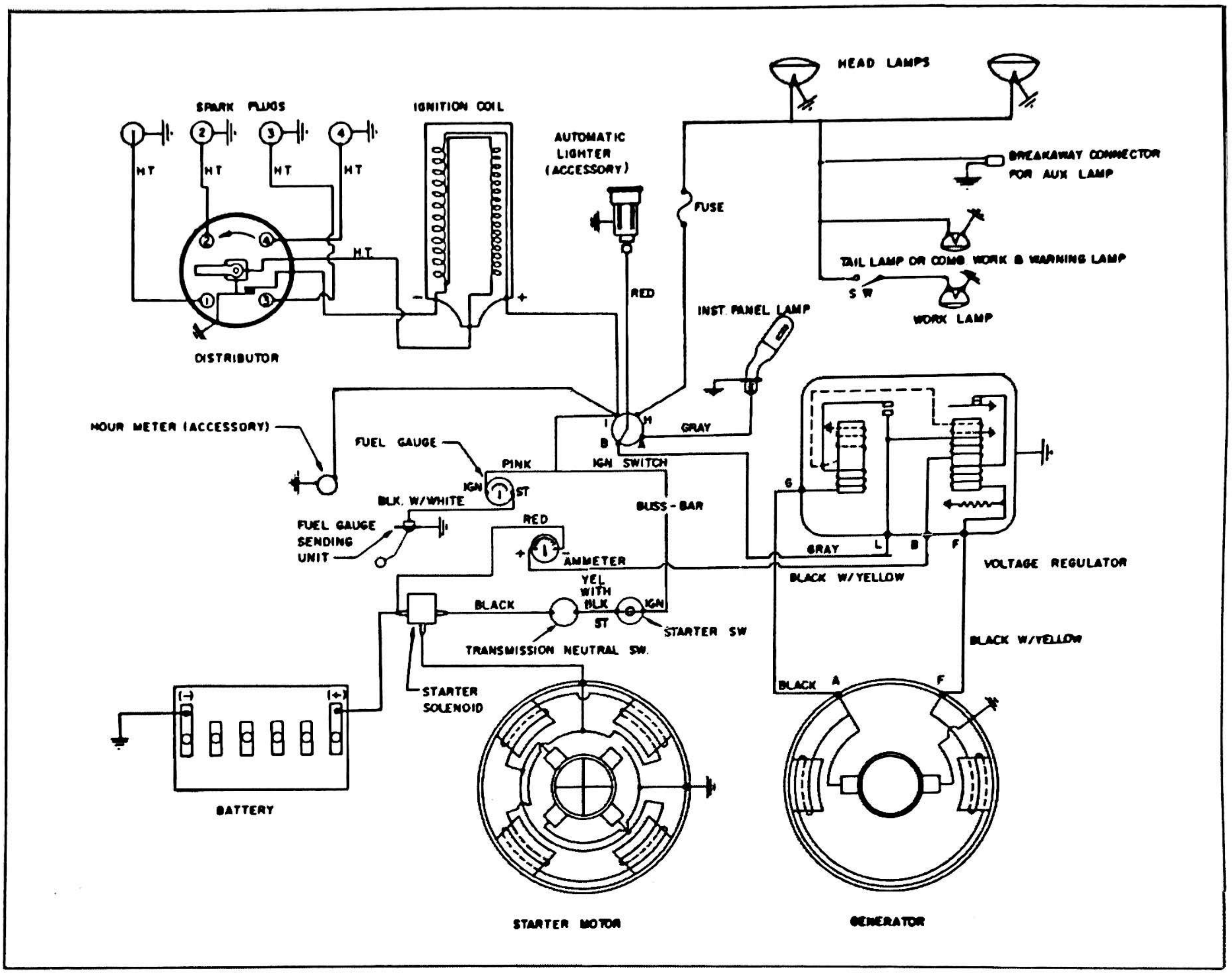

SPARK PLUGS
1
2
3
4
HT
HT
HT
HT
IGNITION COIL
H.T.
−
+
DISTRIBUTOR
AUTOMATIC LIGHTER (ACCESSORY)
RED
FUSE
HEAD LAMPS
BREAKAWAY CONNECTOR FOR AUX LAMP
TAIL LAMP OR COMB WORK & WARNING LAMP
S W
WORK LAMP
INST PANEL LAMP
HOUR METER (ACCESSORY)
FUEL GAUGE
PINK
IGN
ST
BLK. W/WHITE
FUEL GAUGE SENDING UNIT
I
H
B
A
IGN SWITCH
GRAY
BUSS - BAR
RED
+
−
AMMETER
YEL WITH BLK
IGN
ST
BLACK
STARTER SW
TRANSMISSION NEUTRAL SW.
STARTER SOLENOID
G
L
B
F
GRAY
BLACK W/YELLOW
VOLTAGE REGULATOR
BLACK W/YELLOW
BLACK
A
F
(−)
(+)
BATTERY
STARTER MOTOR
GENERATOR

Fig. 32 – Electrical System - Gasoline

4. Lock clevis in position. Make sure the pin fits freely and the clevis does not bind on the governor lever.

Engine Idle Speed:

1. Start the engine. Place throttle in closed position.

2. Hold the control rod against the idling stop and adjust the idling speed screw for 450 to 500 RPM.

Adjust Maximum Speed (No Load):

1. Stop the engine. Place throttle lever in idling position.

2. Check to see if the governor lever arm rod is long enough so that the throttle control arm contacts the vertical arm of the governor lever and holds the control rod against the idle stop. If not, loosen the locknut on the lever arm rod. Adjust the rod until it lightly touches the arm of the governor lever and holds the control rod against the idle stop.

Throttle Handle "Creep":

To correct:

1. Tighten the friction plate locknuts until desired "drag" is obtained.

2. If step one does not correct the "creep", replace the cork washer.

ELECTRICAL SYSTEM

Do not attempt to repair or adjust the voltage regulator, ignition coil, starter, starter solenoid, or generator. These are best serviced by trained personnel with adequate service equipment. Call your authorized M-F Dealer.

> *IMPORTANT: Never operate the tractor with the generator lead disconnected.*

DISTRIBUTOR

It is impossible to obtain economical and satisfactory engine performance if the distributor is not in good working condition. Servicing should include the following points.

1. Check high tension wiring. Frayed or corroded wires, loose, dirty or greasy connections and terminals will cause poor performance.

2. Check the rotor cap. A carbonized or chipped rotor cap will cause misfiring. A hairline crack in the cap may have the same effect. Replace defective parts.

3. Check the contact points. Distributor point gap - 0.022 inch. The points should meet squarely and open to the proper gap.

If points are badly burned, pitted or worn or the fiber arm contacting the distributor shaft is worn, the points need replacing. Dressing the contact points with a fingernail file will give only a few hours of added operation. It is a good practice to install a new condensor when new points are installed.

> *NOTE: Never use emery cloth or sandpaper to clean points. Embedded particles will cause arcing and burning.*

4. See lubrication (100 hours) for proper lubrication. Do not get grease on the firing contacts.

ENGINE TIMING

It is recommended that the engine be timed with a timing light by your local M-F Dealer.

The 7.1:1 compression gasoline engine should be timed to fire 6° BTDC @ 450 RPM and 27° ± 2° @ 2200 RPM.

SPARK PLUGS

Faulty plugs will cause excess fuel consumption as well as loss of power. The plugs should be cleaned to remove carbon, the points filed to the bare metal (a fingernail file can be used) and the points gapped to 0.025 inch every 100 hours and replaced every 250 hours.

For best tractor performance, select the right plug for your operating condition by using the following table:

MAKE OF PLUG	HEAT RANGE		
	Std.	Hot	Cold
Champion	D-16	D-21	D-14
A C	85 S.Com.	87 S.Com.	83 S.Com.
Auto Lite	BT-8	BT-10	BT-4
(Torque Plug to 32-38 ft.-lbs.)			

BATTERY

12volt - 50 am./hr. - negative ground.

THERMOSTAT

A defective thermostat will cause slow warm-up and incorrect operating temperatures, resulting in excessive condensation and crankcase dilution. This means excessive wear on engine parts. Operating the engine with the thermostat removed will do likewise.

The thermostat is located in the cast iron body between the cylinder head and the upper radiator hose on both the diesel and gas engines.

Diesel Engines:

A4-203: - 172°
AD4-203: - 172°

Gas Engines:

Thermostat - 160°

Use a new gasket when installing the casting. Inspect hoses and clamps for leaks. Replace, as needed.

FAN BELT ADJUSTMENT (Gas & Diesel)

The fan belt should be adjusted to have 1/2 in. to 3/4 in. movement. It should not be worn or loose enough to allow slipping - improper engine performance will result.

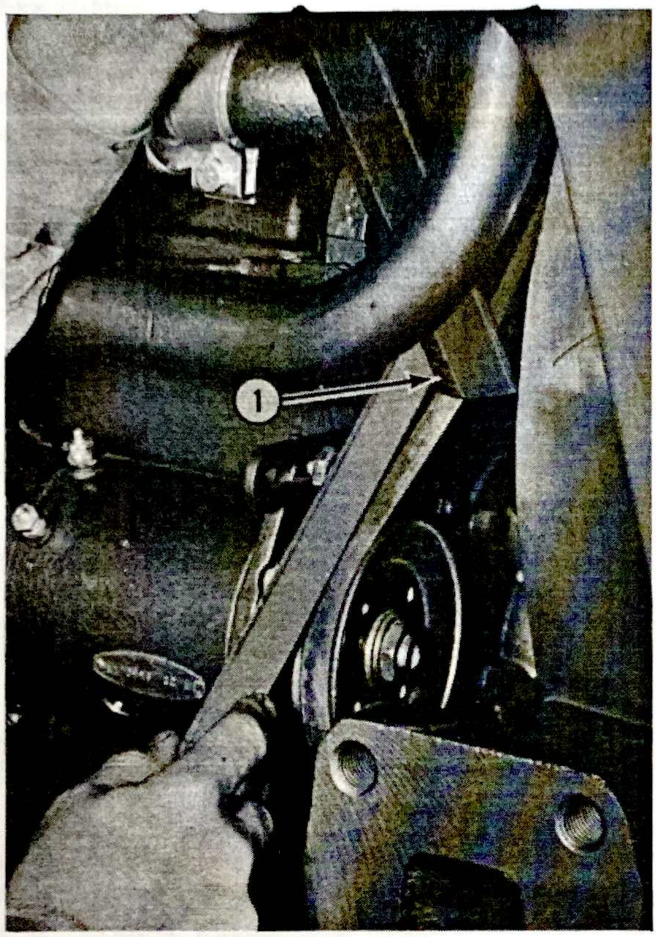


Fig. 33 – Fan Belt Adjustment (Gas and Diesel)
1. 1/2" to 3/4"

To adjust the fan belt, loosen the bolt in the slotted bracket and the two pivot bolts of the generator. Pivot generator to get proper belt tension. Retighten pivot bolts and adjusting bolts.

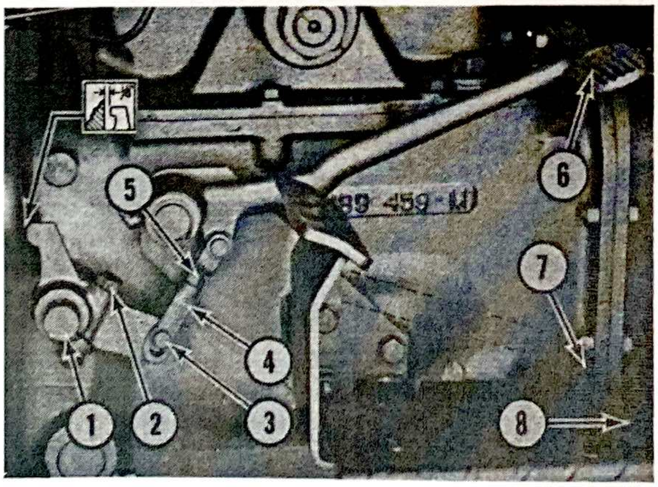


Fig. 34 – Clutch Linkage

1. Shaft, Clutch Release
2. Bolt, Clamp
3. Pin, Clevis
4. Clevis
5. Nut, Locking
6. Pedal Pad - Release Position
7. Pedal Pad - Fully Applied Position
8. 1 Inch Block

CLUTCH PEDAL ADJUSTMENT

1. Loosen the clamp bolt (No. 2, Fig. 34) in the release shaft arm and put a punch through the hole in the end of the clutch release shaft (No. 1, Fig. 34).

2. Rotate the shaft clockwise until release bearing engages with clutch release fingers.

3. Move the release shaft arm until it is 1/8 inch from transmission case.

4. Tighten the clamp bolt securely, and recheck the clearance.

CLUTCH LINKAGE ADJUSTMENT

1. Remove the tractor PTO cap and shift to engine PTO.

2. Place a one-inch block under clutch pedal (No. 8, Fig. 34).

3. Start engine and run at idle speed.

4. Depress clutch pedal (No. 6, Fig. 34) slowly and watch the action of the PTO shaft.

5. If the PTO shaft continues to rotate when the pedal reaches the block, remove the clutch pull rod clevis pin (No. 3, Fig. 34) and shorten the rod by rotating the clevis (No. 4, Fig. 34).

NOTE: Allow sufficient time for PTO to stop.

6. If the PTO shaft stops before the clutch pedal reaches the block, lengthen the clutch pull rod.

7. When the correct adjustment is obtained, secure the clevis pin and tighten the clevis locknut (No. 5, Fig. 34). The dual clutch linkage may be modified to provide a constant running hydraulic pump by installing the clutch pull rod clevis in the rear hole of the clutch release shaft arm. This prevents the operator from declutching through both clutch stages and interrupting the power flow to the hydraulic pump.

NOTE: Do not attempt to operate power take-off driven equipment with the clutch linkage modified in this manner.

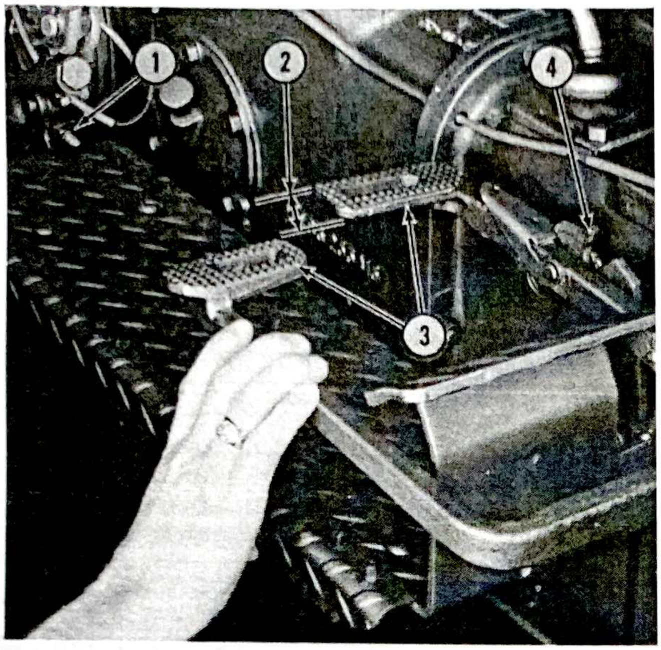


Fig. 35 – Brake Linkage

1. Bolt, Brake Adjusting
2. Free Play, Brake Pedal
3. Brake Pedals
4. Parking Latch, Brake

BRAKE ADJUSTMENT

Maintain 2-1/2 to 3 inches free travel (No. 2, Fig. 35) on each, left and right brake pedals (No. 3, Fig. 35). The adjustment nut (No. 1, Fig. 35) on each respective brake rod at the inner end of the rear axle housing, when turned clockwise, tightens the brake. When turned counter-clockwise, loosens the brake. Brakes should not be adjusted too tight, as heating and excessive wear will result.

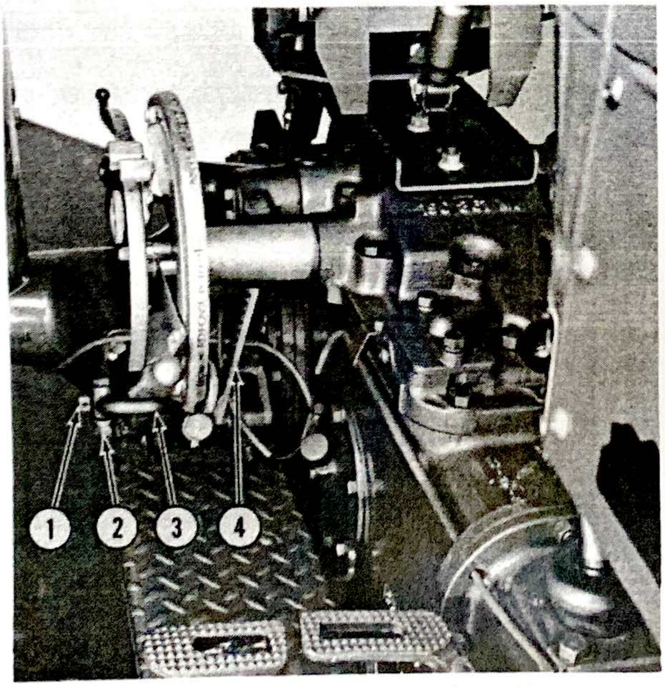


Fig. 36 – Differential Lock Linkage

1. Shaft
2. Bolt, Pedal Clamp
3. Pedal
4. Pedal Pad (Standing Position)

DIFFERENTIAL LOCK

A mechanically actuated differential lock is STANDARD equipment on all diesel-powered MF 65 Tractors. It is OPTIONAL on all gasoline-powered MF 65 Tractors.

Pedal Adjustment:

1. Jack up the right tractor wheel.

2. Loosen clamp bolt (No. 2, Fig. 36) securing differential lock pedal to shaft.

3. Turn shaft downward (No. 1, Fig. 36), using an adjustable wrench on inner end of shaft, to engage differential lock.

4. Turn rear wheel and turn shaft to extreme down position to assure full differential lock engagement.

5. Hold shaft in this position and lower pedal (No. 4, Fig. 36) to within 1/16" to 1/4" of step plate.

Tighten clamp bolt securely.

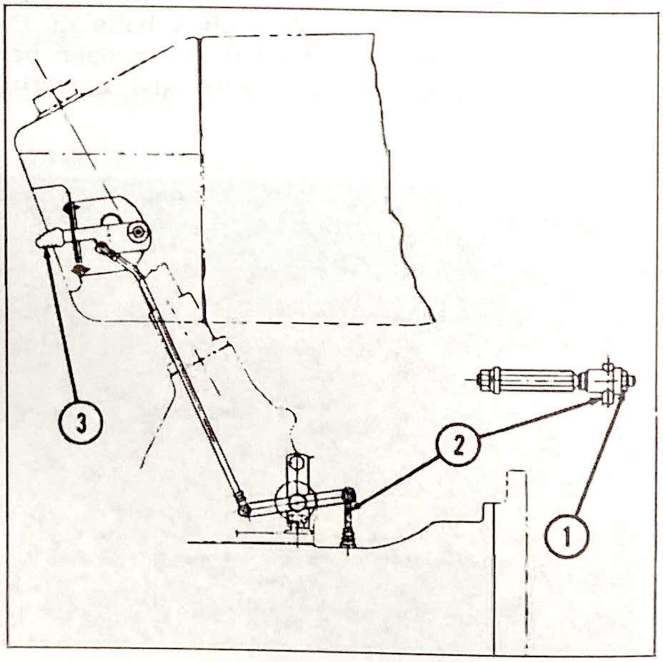


Fig. 37 – Multi-Power Linkage

1. Nut, Locking
2. Rod, Adjusting
3. Lever, Shifting

MULTI-POWER TRANSMISSION (Optional)

The following is the recommended procedure for adjusting the lower linkage shift rod on the multi-power transmission.

1. With the linkage correctly assembled and connected, loosen the nut (No. 1, Fig. 37) on the ball joint assembly, which secures the lower linkage shift rod.

2. Flip the multi-power shift lever (No. 3, Fig. 37) up to the "High" position.

3. Push the lower linkage shift rod (No. 2, Fig. 37) down to its fully lowered position.

4. With the shift rod fully down and the multi-power shift lever in "High" position, tighten nut (No. 1, Fig. 37) on the ball joint assembly securely, so that it will lock the adjustment.

5. Make necessary adjustment so the shift lever will freely travel to "Up" or "Down" position. It must be in one of these positions.

REPACKING FRONT WHEELS

1. Remove wheels from hubs.

2. Remove hub from spindle.

3. Clean bearing, inside of hub and spindle.

4. Repack bearing with a good short-fibered wheel bearing grease and replace bearings in hub.

5. Apply a generous amount of grease around the outside of the inner bearing. Use enough grease to fill the space between the inner bearing and the dust seal after reassembly.

6. Install serviceable dust seal on the wheel spindle. The metal side of the seal must face the outside of the tractor.

7. Replace the hub; avoid damaging the dust seal. Make sure the hub is centered when it engages the seal.

8. Tighten adjusting nut to 70 ft.-lbs. torque, while slowly rotating wheel to properly seat bearing. Then, loosen nut, as follows:

   a. If slot in nut and hole in spindle are aligned, back nut off 1/6 turn (next slot) and install cotter pin.

   b. If slot in nut and hole in spindle are not aligned, back off to next nearest slot plus an additional 1/6 turn and install cotter pin.

9. Replace hub cap tightly.

FRONT WHEEL ALIGNMENT

STANDARD MODEL

Periodically check the front wheels for toe-in of 0 to 1/4 inch. Measure between the tire rib centers, at hub height, at both front and rear of wheels. To adjust toe-in, loosen setscrew on outside end of right-hand tie-rod and loosen clamp bolt on the inside end. Then, rotate tie-rod end to obtain proper adjustment.

NOTE: Make sure setscrew is in forward position to engage setscrew hole.

HIGH ARCH MODEL

The front end of the high arch model differs from the standard model only in the length of the axle extensions and spindles. The information given for the standard model applies to the high arch model, also.

TRICYCLE SINGLE FRONT END

The wheel assembly can be adjusted for end play by adding or removing shims on the top of the yoke shaft. The correct play is 0.002-0.008 inches.

Remove the dust cap and thrust washer and add or remove shims, as necessary. Replace the washer and dust cap and tighten securely.

TRICYCLE TWIN FRONT END

The spindle shaft and end play can be adjusted by removing the dust cover from the opening in the main support assembly. Straighten the tab on the special lockwasher and turn the capscrew in the top of the spindle shaft in or out, as required, until the end play is eliminated and a slight drag is detected on the spindle shaft bearings.

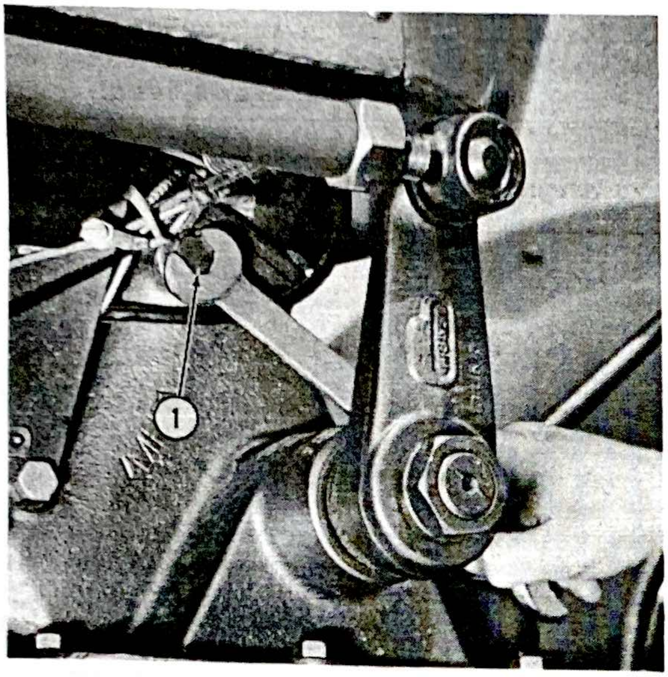


Fig. 38 – Steering Housing, Manual
1. Filler Plug

STEERING GEAR

The improved steering linkage on the MF 65 Standard & High Arch Tractors reduces the turning radius to 11'8" without brakes, and 10'6" with brakes. Lubricate the steering gear through the pipe plug (No. 1, Fig. 38) hole in the side gear cover. If oil is low, fill the housing slowly with transmission oil until the lubricant begins to run out of the plug hole. Normally, the oil will not require changing.

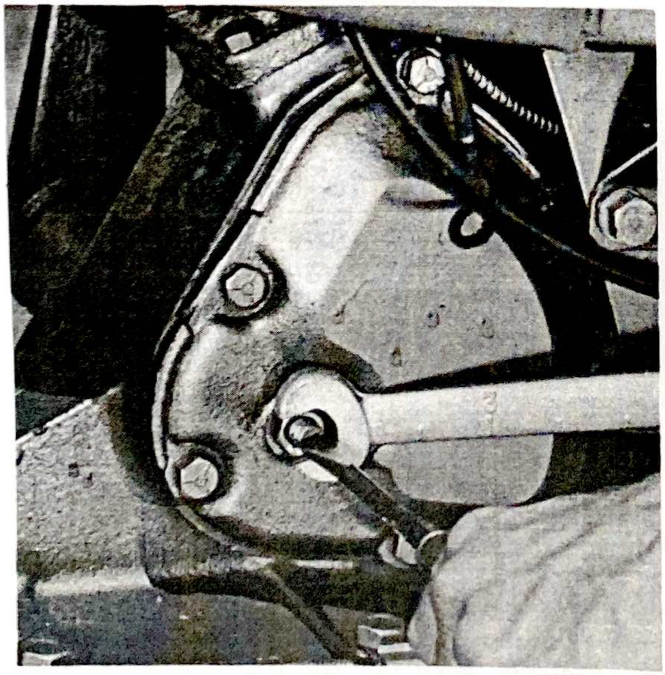


Fig. 39 – Steering Gear Adjustment

ADJUSTMENT

1. Disconnect the drag link at the steering housing.

2. Loosen the adjusting screw locknut and back off the adjusting screw two full turns.

3. Lift on the steering wheel to check steering cam for end play. If present, remove the capscrews holding the steering column to the housing; remove enough shims to allow the steering wheel to turn with a very slight drag. Tighten the capscrews securely before checking.

4. Position the pitman arm in vertical position. Tighten the side cover adjusting screw until a slight drag is noticeable when the gear is turned through mid-position. Tighten locknut while holding the adjusting screw. Recheck the wheel drag.

POWER STEERING

A new type power steering pump is introduced on the AD4. 203 engine. It has a built-in reservoir which eliminates many joints, fittings and hoses, providing increased reliability and cleaner appearance.

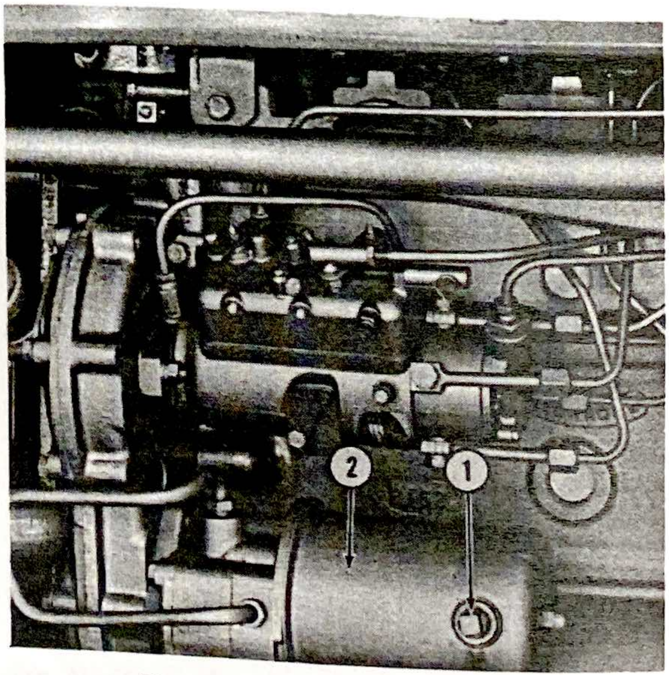


Fig. 40 – Oil Filter, Power Steering
1. Filler Plug
2. Filter Case

MAINTENANCE

Maintenance of the system consists of regular lubrication of the grease fittings and a check of the oil level in the pump. Type "A" automatic transmission fluid should be added to maintain oil level to filler port (No. 1, Fig. 40).

A full flow oil filter of generous size is incorporated in the pump and rarely needs replacing.

SERVICING

Removing the reservoir to change the filter, disconnecting hoses, removing the cylinder or pump, etc., will introduce air into the power steering hydraulic system. This air must be purged from the system for proper operation.

The following 3 steps outline this field procedure.

a. Remove the filler plug in the pump reservoir and fill to the level of the filler port with recommended grade oil.

b. Cycle the steering wheel from full right to full left several times with the engine running at idle speed. Add oil until the proper level is reached, and repeat cycling operation until no additional oil is required.

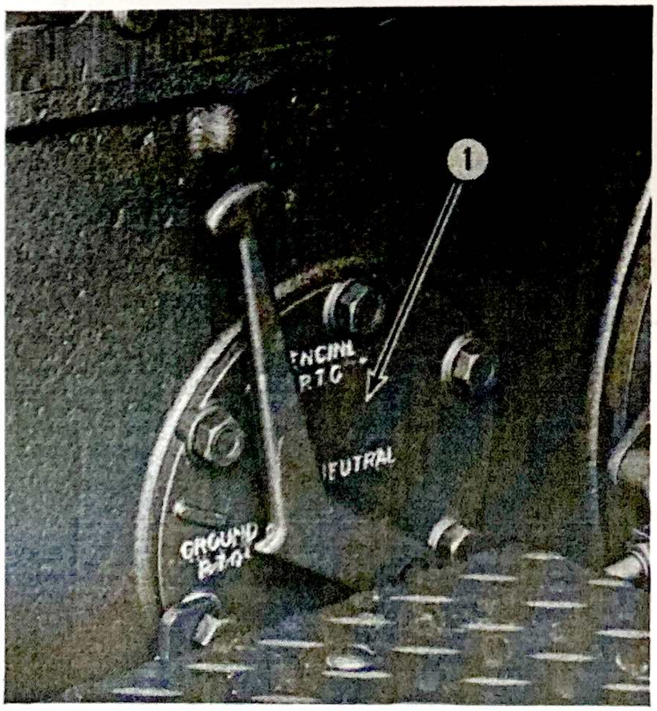


Fig. 41 – Power Take-Off Control Cover
1. Cover Plate

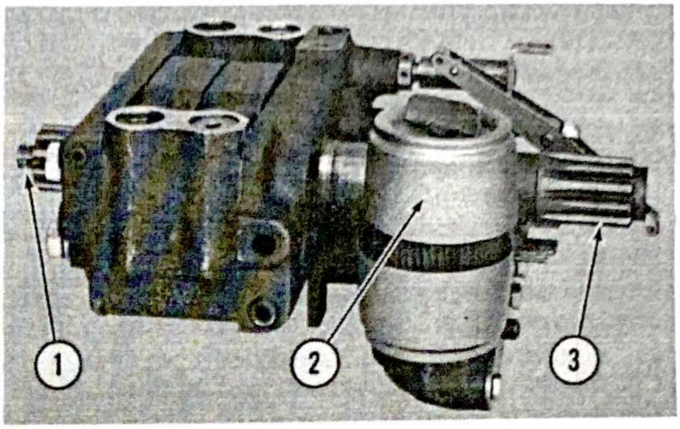


Fig. 42 – Hydraulic Pump Assembly with Filter
1. Front End 2. Filter Assembly 3. Rear End

c. With the engine turned off, make a final check of the oil level and add oil, as necessary, to bring it level with the filler port.

Now, replace the filler plug.

CLEANING THE HYDRAULIC PUMP INTAKE FILTER

1. Drain the oil from the transmission-differential by removing the two magnetic drain plugs.

2. Remove the PTO control plate on left side of tractor, Fig. 41.

3. Reach in and down and unscrew filter assembly from transmission. Clean the metal strainer with a suitable solvent (see lubrication 750 hours).

Reassemble; install new rubber gasket (No. 5, Fig. 43) at strainer mounting. Remount strainer.

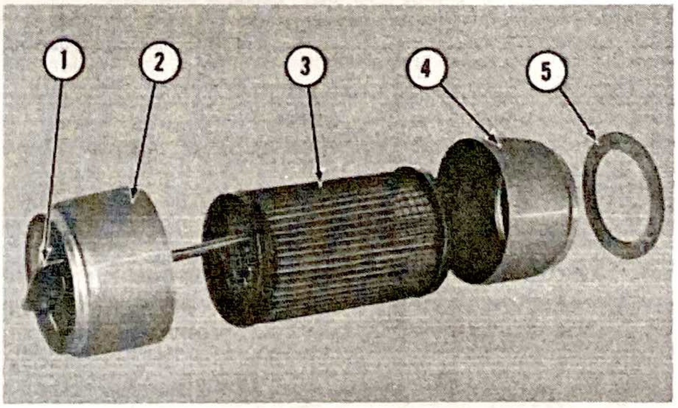


Fig. 43 – Hydraulic Pump Filter
1. Winged Bolt 2. Cap 3. Screen 4. Sump 5. Gasket

Replace PTO control plate - make sure the shifting shaft yoke is properly placed on the PTO shaft.

NOTE: When removing the filter assembly, use extreme care to remove it as a complete unit. If the strainer comes apart inside the tractor, the sludge and dirt will fall back into the transmission case.

NOTE: A partially clogged hydraulic pump filter will result in a loss of power in the hydraulic system lifting mechanism.

RECOMMENDED TIRE PRESSURES		
Front:	5.50 - 16	24-28 lbs.
	6.00 - 16	24-28 lbs.
	7.50 - 10	24-28 lbs.
Rear:	13-24	14-16 lbs.
	12-28	14-16 lbs.
	13-28	14-16 lbs.
	12.4/11-38	12-16 lbs.
	13.6/12-38	12-16 lbs.

When using weights, add 1 lb. air per 100 lbs. of weight; add air up to maximum recommended pressure, only.

TIRES

Correct tire inflation is essential for extended tire life, as well as efficient tractor performance. Under-inflation will cause uneven tire wear, excess slippage and poor steering.

Over-inflation will cause increased tire wear, excess slippage, excess packing, ruts, and excess tire bruises and cuts.

LIQUID-FILLING

For some operations, additional tractor weight is beneficial. Liquid-filling the tires can add the weight where it will do the most good - front back or both. A calcium chloride-water solution is most widely used for this, as it will not freeze.

The following table may be used as a guide for liquid-filling your tractor tires.

Tire Size	Cal. Chloride-lbs.	Gallons Water	Total Added Weight
5.50-16	19.8	5.6	67
6.00-16	20.7	5.9	70
7.50-10	19.2	5.5	65
12-28	168.0	48.0	568
13-28	208.0	59.5	695
11-38	165.0	47.1	557
12-38	213.0	60.7	719

The above table is based on a 100% fill, using 3-1/2 lbs. calcium chloride per gallon water.

TROUBLE SHOOTING DIESEL TRACTOR

ENGINE CRANKING FAILURE

1. Dual range shift lever not in neutral position.

2. Loose, grounded, shorted or broken wiring. Check connections on all switches.

3. Discharged or weak battery.

4. Inoperative starting motor.

ENGINE CRANKS BUT FAILS TO START

Fuel System

1. Fuel shut-off control rod in the "off" position.

2. Lack of fuel in the tank. Fill tank and "air-bleed" the system.

3. Fuel tank sediment bowl shut-off valve in the "off" position.

4. Fuel filters "clogged". Replace both filters and "air-bleed" the system.

5. Injection pump failure. Have your M-F Dealer replace the pump.

6. Faulty injector assembly. Have your M-F Dealer test and service or replace the assembly.

7. Injection pump timing incorrect. Have your M-F Dealer correctly time the pump.

8. Excessive air in the fuel system. "Air-bleed" the entire fuel system.

9. Injection pump idle speed set too low. Adjust the injection pump idle speed stop screw.

Air System

1. Air cleaner inlet tube restricted.
2. Plugged or "clogged" air cleaner.

ENGINE OPERATION ROUGH

1. Injection pump incorrectly timed.
2. Leaky starting aid.
3. Faulty injectors.
4. Faulty injection pump.

EXCESSIVE ENGINE EXHAUST SMOKE

1. Faulty injectors.
2. Incorrect injection pump timing.
3. Leaking starting aid.
4. Clogged air cleaner.
5. Improper valve adjustment.
6. Burned, worn or sticking valves.
7. Excessive operation at low idle speed or loads.

COLD WEATHER STARTING

1. Starting aid fuel reservoir tank and feed lines plugged. Clean and/or replace.

2. Starting aid faulty. Replace unit.

3. Starting and electrical lead broken, shorted or broken wire. Check connections and replace wire, if necessary.

INJECTION PUMP MAXIMUM SPEED INCORRECT

1. Throttle linkage damaged. Replace and adjust linkage.

2. Faulty injection pump governor. Have your M-F Dealer install new pump.

LOSS OF POWER

1. Plugged fuel filter.
2. Worn rings, pistons or sleeves, burned or sticking valves.
3. Faulty injection pump governor action.
4. Faulty throttle or governor linkage.
5. Blown head gasket.
6. Brakes dragging.
7. Improper valve adjustment.
8. Connecting rod or main bearings too tight.
9. Clogged air cleaner.
10. Fuel shut-off rod linkage incorrect.
11. Faulty pump timing.

EXCESSIVE FUEL CONSUMPTION

1. Faulty injectors.
2. Pump timing incorrect.
3. Excessive fuel pressure line leakage.
4. Throttle linkage incorrect.
5. Burned, worn or sticking valves.

6. Worn pistons, rings or sleeves.

7. Improper valve adjustment, worn or bent push rods.

8. Engine overheating.

9. Clutch slippage.

10. Brakes dragging.

11. Excessive exhaust back pressure.

12. Faulty cooling system thermostat.

13. Leaking starting aid.

14. Clogged air cleaner or air pipe.

ERRATIC MISFIRE

1. Faulty injectors.

2. Weak or broken valve springs.

3. Sticky valves.

4. Excessive air in the system.

5. Plugged fuel filters.

6. Water in fuel.

INJECTION PUMP IDLE SPEED INCORRECT

1. Idle speed stop screw adjusted incorrectly. Reset stop screw - 575 to 625 RPM.

2. Improper pump timing. Have your M-F Dealer time your injection pump.

ENGINE WILL NOT STOP

1. Fuel shut-off rod linkage incorrect. Readjust linkage.

2. Improper pump functioning. Have your M-F Dealer replace pump.

ENGINE KNOCK

1. Faulty injectors.

2. Starting aid leaking.

3. Timing advanced. Have your M-F Dealer correctly time the injection pump.

TROUBLE SHOOTING GASOLINE TRACTOR

ENGINE CRANKING FAILURE

1. Dual range shift lever not in "neutral" position.

2. Ignition switch key in "off" position.

3. Loose, grounded, shorted or broken wiring. Check connections on all switches, solenoid, starting motor and battery.

4. Discharged battery.

5. Inoperative starting motor.

ENGINE CRANKS BUT WILL NOT START (Ign. Spark Failure)

1. Loose, grounded, shorted or broken ignition wiring. Check connections on ignition switch, ammeter, coil, distributor and spark plugs.

2. Mechanical failure of spark plugs — cracked or broken porcelain, incorrect gap setting, electrodes fouled.

3. Distributor failure. Inspect cap for cracks, carbon traces and condition of wire terminals. Wipe clean of dirt and moisture. Inspect rotor, breaker points, condensor and wiring connections.

4. Faulty coil. Remove high tension wire from center of distributor and hold end of wire about 1/4 inch from suitable ground. With ignition switch on, crank engine and note if coil produces spark. It should produce a strong blue spark, not a weak yellow one. If no spark occurs, check all primary wiring before condemning coil.

ENGINE CRANKS BUT WILL NOT START (Carburetion Failure)

1. Choke not pulled out when engine is. cold.

2. Throttle closed.

3. Fuel shut-off valve not open.

4. Fuel tank empty.

5. Clogged vent in fuel cap.

6. Clogged fuel filter or screens.

7. Restricted fuel line.

8. Restricted carburetor passages.

9. Maladjustment of needle valves.

10. Water deposited in carburetor. In cold temperatures, water freezing would prevent gasoline flow.

11. Air cleaner inlet tube restricted.

12. Clogged air cleaner.

13. Throttle and/or governor linkage inoperative or incorrectly adjusted.

14. Air leak in fuel line.

15. Cracked or broken intake manifold.

16. Valves sticking.

ENGINE CRANKS SLOWLY

1. Weak battery.

2. Crankcase oil too heavy for temperature.

3. Defective starting or connections.

EXCESSIVE FUEL CONSUMPTION

1. Fuel leak.

2. Fouled air cleaner.

3. Idle adjustment incorrect.

4. Main jet adjustment incorrect.

5. Timing off.

6. Automatic spark advance not working properly.

7. Distributor points need replacing.

8. Spark plugs need servicing or replacing.

9. Faulty wiring.

10. Improper valve timing.

11. Burned, worn or sticking valves.

12. Worn pistons, rings or sleeves.

13. Improper valve adjustment, worn or bent push rods.

14. Engine overheating.

15. Clutch slipping.

16. Brakes dragging.

17. Excessive exhaust back pressure.

EXCESSIVE OIL CONSUMPTION

1. Oil leak.

2. Plugged breather pipe.

3. Worn valve guides.

4. Worn, broken or ill-fitted rings.

5. Worn, scored or out-of-round cylinders or pistons.

6. Worn ring grooves.

7. Inverted rings.

8. Stuck piston rings.

9. Worn neoprene oil guard gaskets on the intake valves.

LOSS OF POWER

1. Dirty or improperly adjusted carburetor.

2. Faulty ignition.

3. Worn rings, pistons, or sleeves; burned or sticking valves.

4. Faulty governor operation.

5. Faulty throttle, governor or choke linkage.

6. Crack in intake manifold or leaky gasket.

7. Blown head gasket.

8. Brakes dragging.

9. Improper valve adjustment, worn or bent push rods.

10. Connecting rods or main bearings too tight.

11. Excessive exhaust back pressure.

12. Clogged air cleaner.

ERRATIC MISFIRE

1. Dirty carburetor.
2. Weak or broken valve springs.
3. Sticking valves.
4. Faulty ignition.

PRE-IGNITION

1. Poor grade of fuel.
2. Ignition timing too far advanced.
3. Engine overheating.
4. Heavy carbon deposits in the combustion chamber.
5. Spark plugs of improper heat range.
6. Insufficient tappet clearance.
7. Burned or worn valves.
8. Improper distributor advance.

CONTINUOUS MISFIRE

1. Stuck or burned valves.
2. Blown head gasket.
3. Faulty ignition.
4. Improper timing.

ENGINE OVERHEATING

1. Thermostat stuck closed.
2. Water leakage — too low water level.
3. Fan belt slipping.
4. Clogged radiator core.
5. Carburetor mixture too lean.
6. Improper ignition timing.
7. Fouled cooling system.
8. Engine excessively tight.
9. Improper valve timing.

ACCESSORIES

The accessory items listed in this manual section were designed to make your work easier, more enjoyable and more profitable. These accessories will also help you adapt your tractor to a wide range of specialized operations.

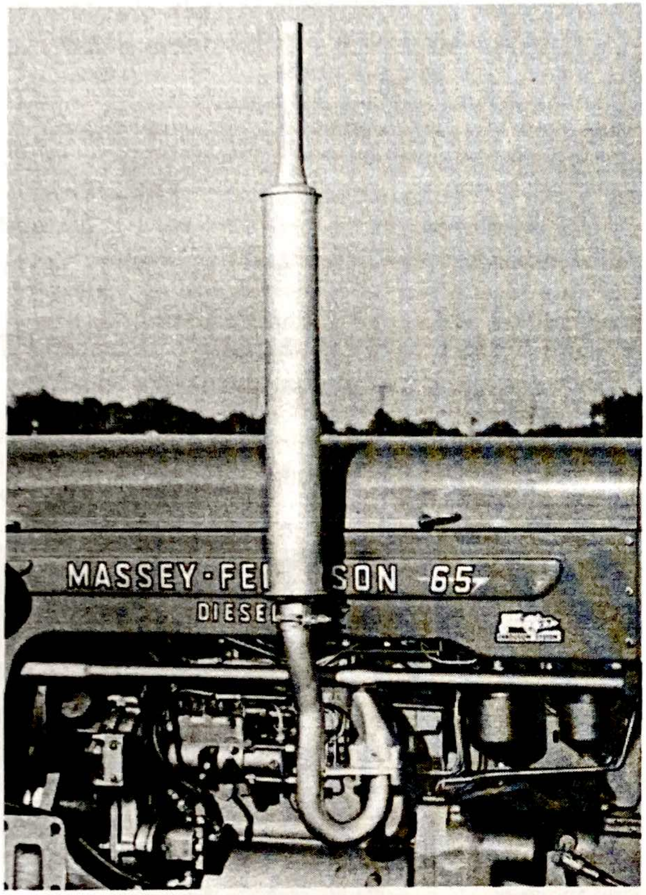


Fig. 44 – Vertical Exhaust (Diesel)

VERTICAL EXHAUST KIT

The vertical exhaust kit replaces the rear exhaust pipe and may be installed in the following manner:

1. Remove the support brackets, loosen the clamp at the rear of the muffler and remove the exhaust tail-pipe assembly.

2. Install the vertical exhaust support bracket on the two rear exhaust manifold studs.

3. Install the vertical exhaust pipe and tighten the clamps securely.

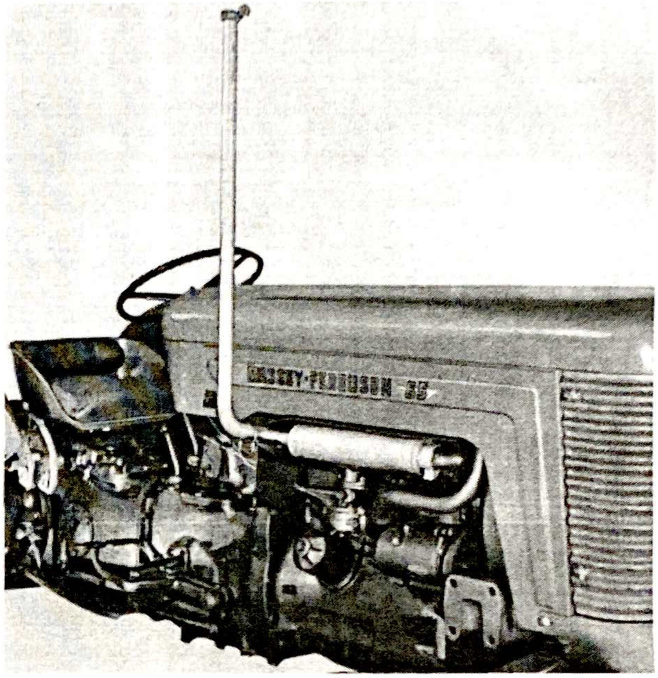


Fig. 44a – Vertical Exhaust (Gasoline)

EXHAUST PIPE CAP

A weather cap is available for the vertical exhaust pipe. This cap automatically opens when the engine starts and closes when it stops. It prevents rain or foreign material from entering the exhaust pipe or muffler.

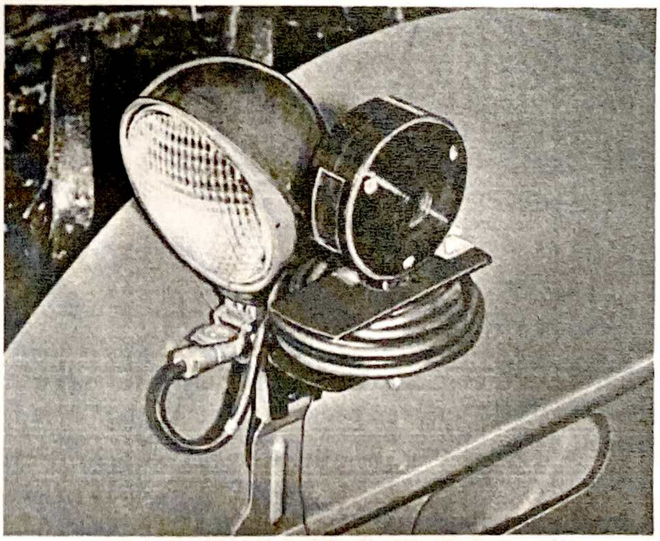


Fig. 45 – Implement Lamp

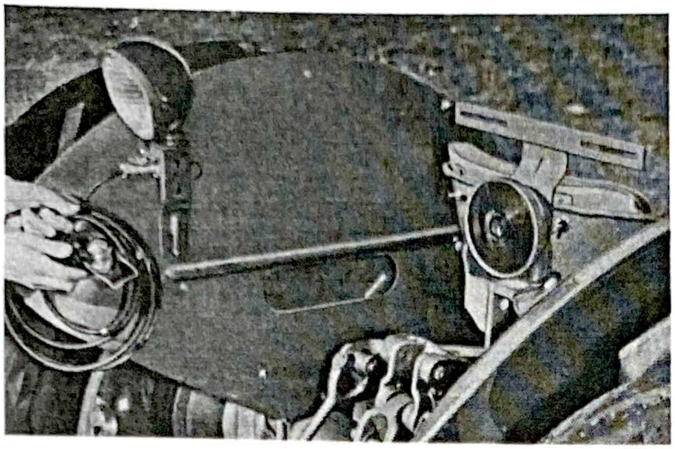


Fig. 46 – Trouble Lamp, Tail Lamp, License Bracket

IMPLEMENT SAFETY LAMP

The implement safety lamp kit includes a lamp, combination mounting bracket, cable reel, 25 feet of cable with a break-away socket, two mounting brackets and two pieces of reflective tape.

> *NOTE: Whenever equipment is being driven on a public thoroughfare, the lighting of the equipment must conform to the state lighting regulations.*

TAIL LAMP AND LICENSE BRACKET

A tail lamp and license bracket is available for those who are required to license tractors.

TROUBLE LAMP

The trouble lamp is equipped with a long cord and a plug which fits the break-away socket located under the tail lamp.

EXTERNAL HYDRAULIC CYLINDERS

The M-F 65 Tractor (both diesel and gasoline) may be equipped to operate either the single-acting or double-acting remote hydraulic cylinders.

The hydraulic cylinder should be attached to the implement in *only one position.*

The pump body clevis should be attached to the stationary implement bracket and the piston rod (ram arm) clevis should be attached to the lift (moveable) mechanism of the implement. The hydraulic hose-cylinder connections should be on top.

EXTERNAL HYDRAULIC CONTROL VALVES

Two separate options are available: a "double-spool" valve and a "third-spool" valve which can be attached to the "double-spool" valve, making it a "triple-spool" valve. Either option provides open-center control of both single and double-acting external hydraulic cylinders. Specific directions for installation and operation of these valves are found in the External Auxiliary Hydraulic Control Valve Manual. Once installed, the valves may remain on the tractor.

The external hydraulic control valves and the manual are available at your local M-F Dealer.

DUAL REAR WHEELS

Dual rear wheels help to prevent excessive slippage in loose textured soil. The spacer kit contains a spacer and extension nuts and is designed for use with 12-28 or 13-28 tires.

To install:

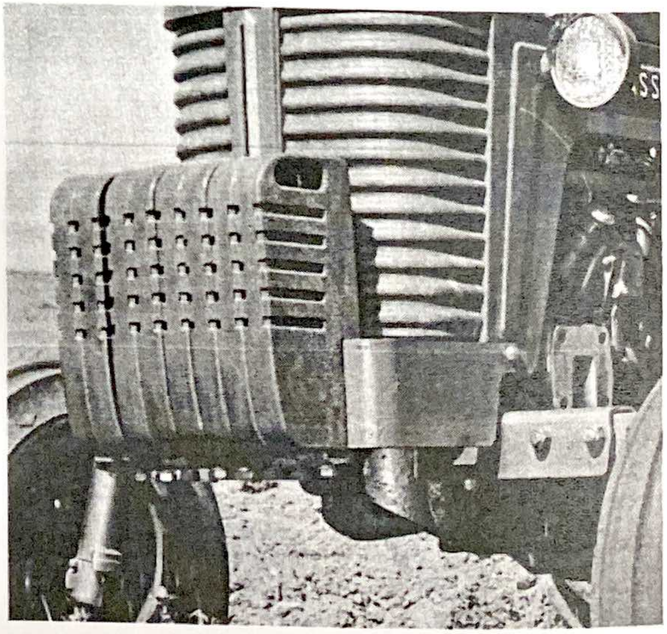


Fig. 47 – Front End Weights

1. Raise the rear wheel of the tractor and replace the regular nuts with the extension nuts. Torque to 180 ft.-lbs., minimum.

2. Install spacer and outer wheel. Torque to 180 ft.-lbs.

> *NOTE: In order to install the outer wheel, the correct setting must be made before installation or it will be impossible to mount the wheel.*

When installing dual rear PAVT wheels with 12-28 or 13-28 tires on standard clearance tractors, the inner wheels should be set at 52 inches. The disc hubs are installed back to back.

TRACTOR FRONT WEIGHT KIT

A front wheel kit consists of a mounted frame and 60-lb. hand weights. The frame is designed to accept eight of these weights for a total of 480 additional pounds.

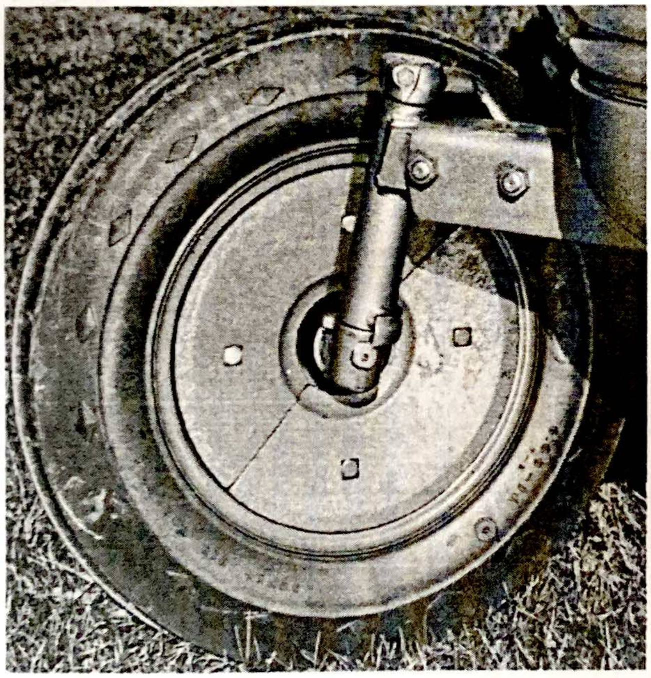


Fig. 48 – Front Wheel Weights

FRONT WHEEL WEIGHTS

Front wheel weights are used to maintain steering traction when heavy overhanging implements are mounted on the rear of the tractor. These weights are installed in the dish side of the wheel discs, are of two-segment construction and can be mounted without removing the wheels.

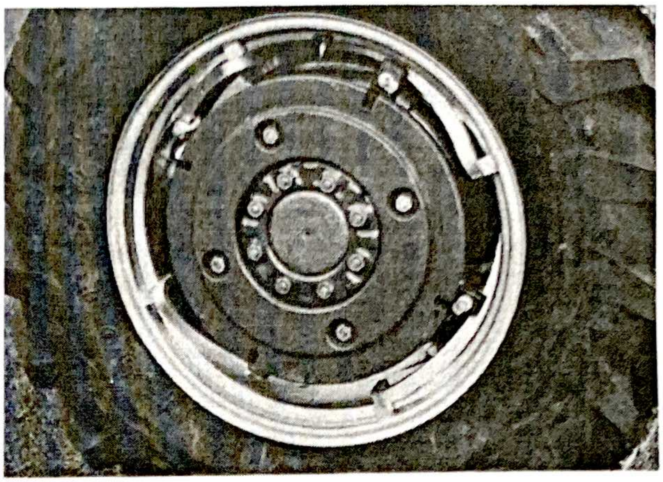


Fig. 49 – Adaptor Ring Installed, Rear Wheel Weight

> *NOTE: Inspect regularly to make sure the wheel weights are bolted tightly in place.*

REAR WHEEL WEIGHTS

Rear wheel weights are available for operation where increased weight and traction are desired. The weights are light enough for easy handling and are very compact when installed.

The adapter ring, which weighs approximately 50 pounds, attaches to the wheel disc with four bolts. The first weight is bolted to the adapter ring, the second weight is bolted to the first

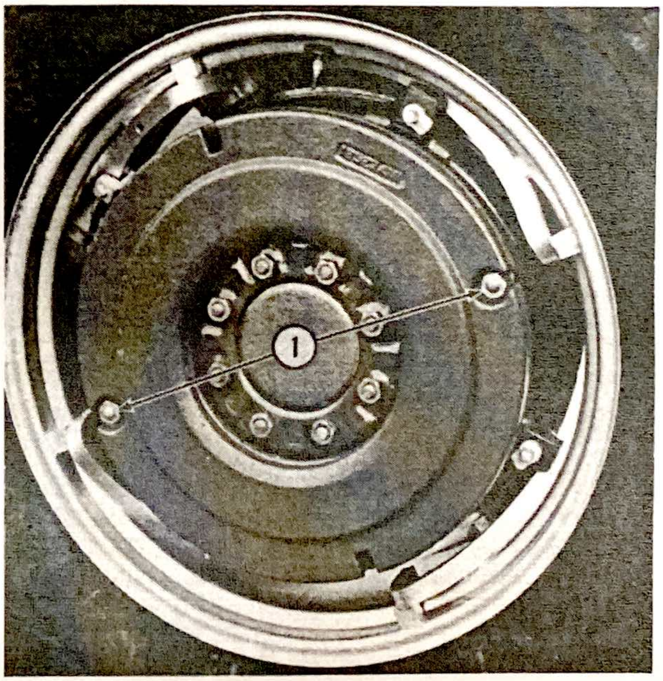


Fig. 50 – First Disc Type Weight Installed
1. First Weight Attaching Bolt

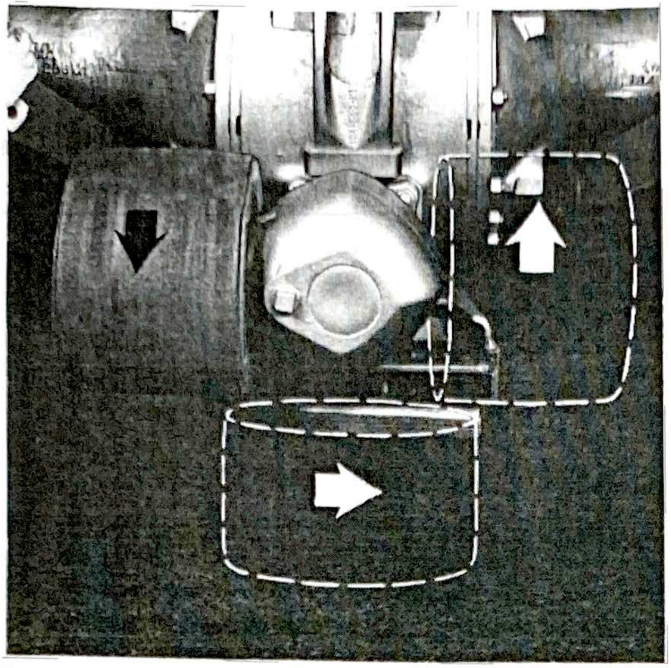


Fig. 51 - Light Duty Pulley (3 Possible Mounting Positions)

weight, and so on, until the desired weight is obtained. Each disc weighs approximately 75 pounds.

The rear wheel weights are installed, as follows:

1. Insert the four 2-1/4 x 5/8 carriage head bolts through the holes provided in the wheel disc and turn the knurled rings finger tight.

2. Position the adapter over the four bolts and secure with nuts provided.

3. Place the first weight in position on the adapter ring and secure with nuts provided.

4. Install additional weights in the same manner as the first one.

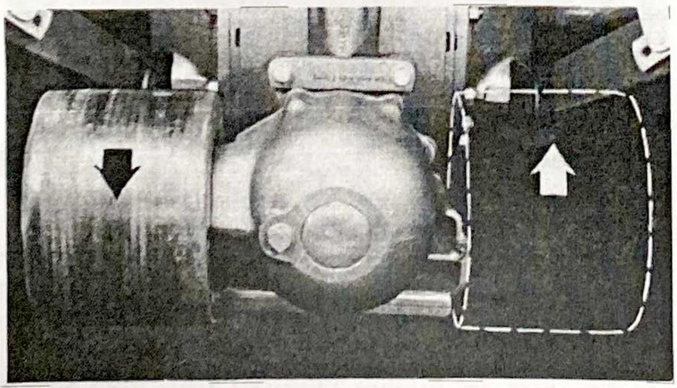


Fig. 52 - Heavy Duty Pulley (2 Possible Mounting Positions)

BELT PULLEYS

Two belt pulley attachments are available. The "light duty" pulley is recommended for use only when light duty and short-time pulley work is anticipated. If the pulley is to be used for long, continuous work, the "heavy duty" pulley is recommended.

To install the "Light Duty" pulley:

1. Remove the power take-off cap.

2. Remove the check chain anchor brackets from the rear of the tractor center housing.

3. Mount the pulley with four capscrews in any of three positions (right, left or down).

To install "Heavy Duty" pulley:

It is necessary to use the pulley adapter kit, consisting of a PTO extension and belt pulley adapter housing.

1. Remove the PTO cap.

2. Position the PTO extension on the PTO and secure it with the machine screw.

3. Remove the nuts from the four anchor bracket retaining studs, position the adapter housing on the studs and tighten the nuts.

4. Detach the check chains from the anchor brackets.

5. Remove the pin from the adapter housing and position the belt pulley in either right or left position. Install the pin in the adapter housing and secure with the linch pin. The heavy duty pulley is not to be mounted in the down or up positions.

> *NOTE: 1. Do not force the pulley when mounting.*
>
> *2. Never install the pulley in the "up" position.*
>
> *3. Maintain oil level to the filler plug opening. Use SAE 80 straight mineral oil.*

6. A 10-1/4 in. diameter laminated belt pulley is available for use with tractors having a 540 PTO RPM @ 1700 RPM Engine speed. It is necessary to use this larger pulley to maintain the belt speed of approximately 3100 ft. per min. @ 2000 Engine RPM.

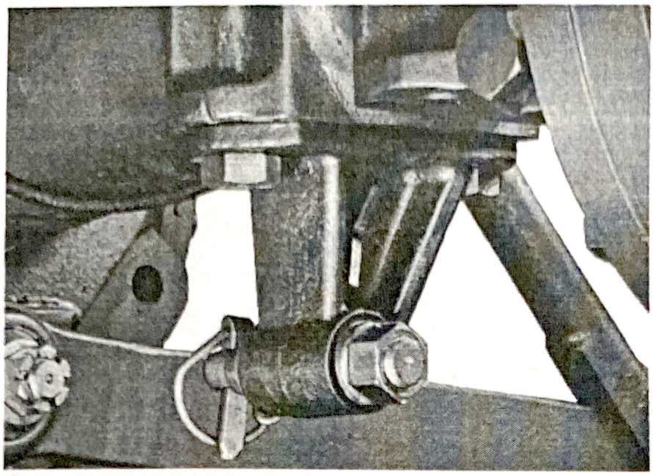


Fig. 53 – Stabilizer Bracket - Correct Mounting Position

STABILIZER KITS

The stabilizer kit, when correctly installed, prevents undesirable sidewise movement of such rear-mounted implements as the side rake, corn planter, cultivator, etc. Consult the implement manual when in doubt about using a stabilizer with an implement.

Attach the stabilizer bracket with the pin ahead of center and pointing inward.

The brackets are left and right and cannot be interchanged.

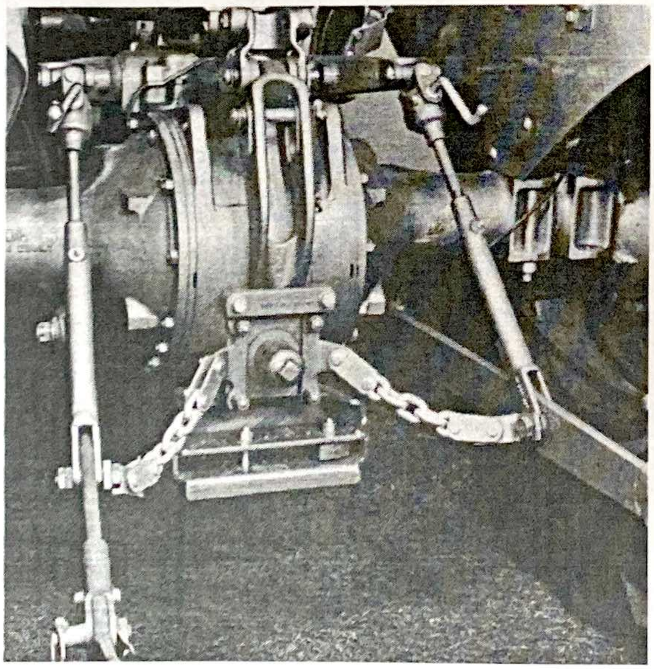


Fig. 54 – Tractor Equipped with Left and Right Leveling Boxes

LIFT LEVELING KIT

This is a leveling box to replace the lift rod on the left side of the tractor. This kit is to be used to control the tractor lower links when the rear tool bar is used with a side-mounted cultivator. Two leveling boxes permit selection of proper depth relation between front and rear gangs.

> *NOTE: When ordering leveling boxes, be sure to specify standard or hi clearance model.*

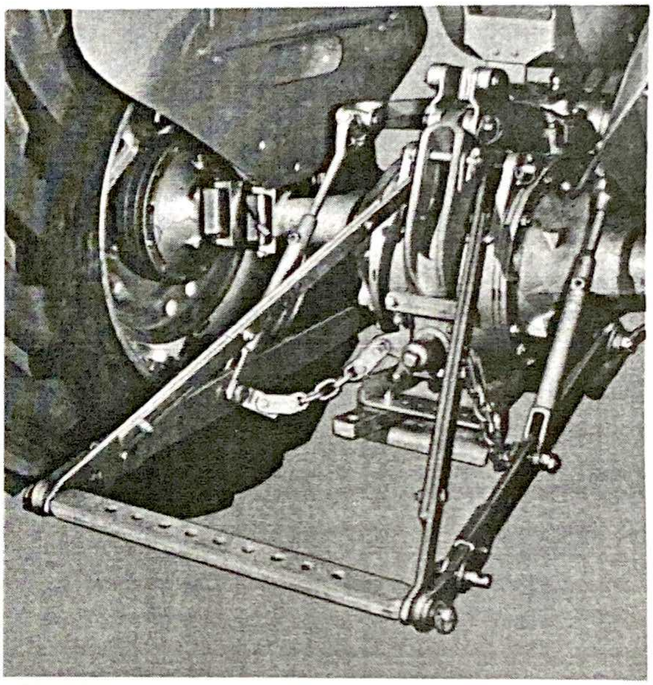


Fig. 55 – Straight Drawbar with Safety Links

STRAIGHT DRAWBAR

A universal, straight type drawbar is available for use with your M-F 65, attaching to the hydraulic lift arms. The nine holes permit a lateral adjustment and the stay links furnished make it possible to adjust the height of the drawbar to meet all implement requirements. The straight drawbar is available only with the 7/8 inch diameter attaching pins and should be used only when the tractor lower links are equipped with 7/8 inch balls ends.

> *CAUTION: Never pull from the upper link connections or use the straight drawbar without the stay links.*

Installation:

1. Remove the hinge pin at the rear of the tractor center housing.

2. Lower the lower links and level them.

3. Attach the stay links to the drawbar ends.

4. Lift and set the assembly on the tractor lower links.

5. Pin the top of the stay links to the tractor center housing by installing the hitch pin and securing with linch pin.

6. Place the ends of the drawbar, one at a time, in the ball joints of the lower links and secure with linch pins.

7. Adjust the drawbar to the desired height by loosening the bolts on the stay links and lengthening or shortening, as desired. The standard height is obtained when the notches on the stay links line up. Tighten bolts securely.

THREE-POINT HITCH CONVERSION

When you receive your M-F 65 Tractor, the three-point hitch will conform to what is referred to as Category 1. The lower link ball ends are of the correct size to accept the 7/8 inch diameter implement hitch pins and the lower link check chains are properly installed for attaching to an implement where the hitch pin spacing is 28-1/4 inches, center-to-center.

To conform to Category 2, the lower link ball ends are the correct size to accept a 1-1/8 inch diameter implement hitch pin and the hitch pins are spaced 34-3/4 inches, center-to-center. The upper link pin diameter for Category 2 is 1 inch.

If it is desired to convert the tractor lower links to fit an implement with a Category 2 hitch, there are available link ball ends for the 1-1/8 inch diameter implement hitch pins, which are interchangeable with the original link ball ends, and may be used to convert the lower links.

When attaching an implement with a Category 2 hitch, it is also necessary to move the check chains from the inner to outer holes.

POWER TAKE-OFF SAFETY SHIELD

To provide adequate protection when operating mounted PTO-driven implements, a short accessory PTO shield is available. The shield attaches to the four check chain anchor bracket studs.

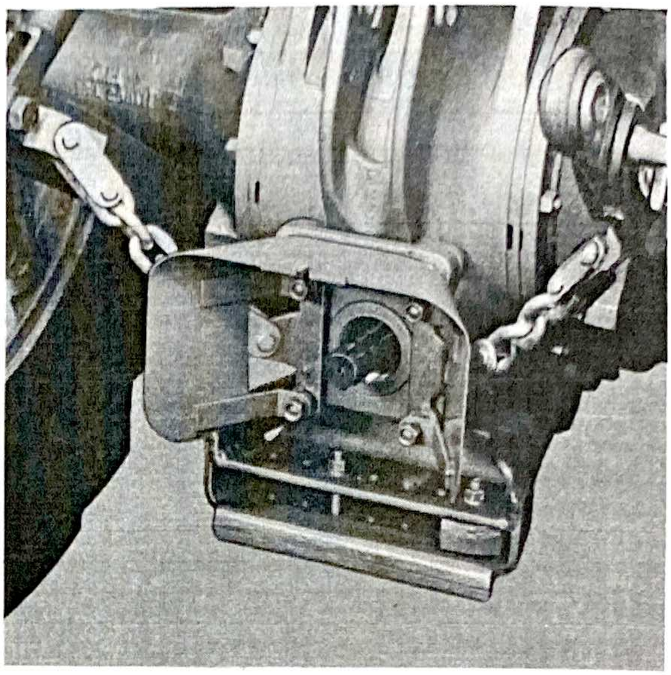


Fig. 56 – PTO Safety Shield

The short PTO safety shield may also be used when operating pull type PTO-driven implements with the swinging drawbar in the forward position and the implement PTO shaft connected directly to the tractor PTO shaft. However, this drawbar PTO combination is not recommended for use where short turns for the combined tractor and implement are anticipated.

CAUTION: Always replace the tractor PTO cap when the PTO is not is use.

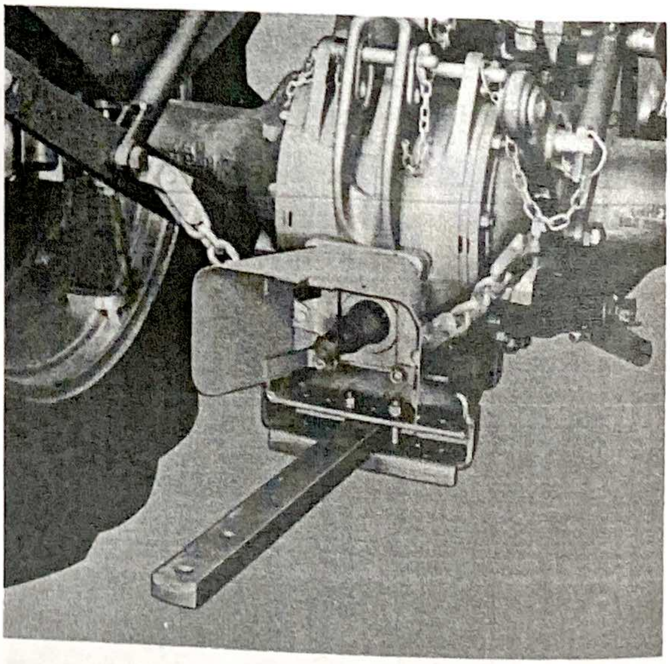


Fig. 57 – PTO Extension and Safety Shield

POWER TAKE-OFF EXTENSION AND SHIELD

When using your tractor with most pull type power take-off operated equipment, it is highly recommended that the swinging drawbar be placed in the rearmost position and the PTO extension and safety shield be installed. This arrangement places the hitch point further to the rear, thus providing for a shorter turning radius for the combined tractor and implement.

> *CAUTION: Always keep the PTO safety shield in place when operating PTO-driven equipment.*

ROLLER SWINGING DRAWBAR

A roller swinging drawbar is available for the M-F 65 Tractor. Fifteen holes in the drawbar assembly permits the drawbar to be positioned and fastened for a direct pull behind the tractor or at an angle to either side of center. The drawbar may be used without securing in one position to allow swinging to aid in turning the tractor shorter with a pull type implement.

FRONT ENDS

The high clearance tractors are available in either the wide front axle or the tricycle front axle. These axles are interchangeable and available at your local authorized M-F Dealer.

The tricycle front end is required for mounted corn pickers. The tire size for this assembly is limited to 600 x 16 tires.

PRE-CLEANER KIT

The pre-cleaner kit is an accessory for M-F 65 Tractors. It is for use in severe dust conditions to remove large particles of dirt and foreign material (leaves, lint, etc.) from the air, before it reaches the air cleaner.

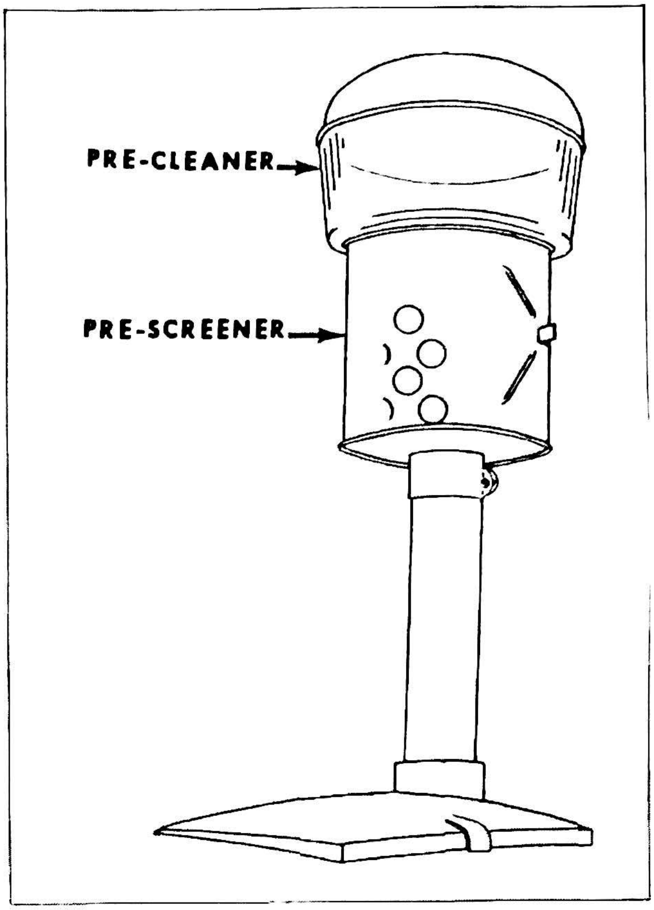


Fig. 58 – Pre-Cleaner Kit, Air Cleaner

The kit includes the pre-cleaner, tube, a new hood-ornament casting, and attaching hardware. For late model tractors, the present trademark emblem is used to fasten the new hood-ornament casting to the front of the hood. The earlier model tractors, having the separate air scoop, will require ordering the latest model emblem and attaching parts, in addition to the kit.

A pre-screener kit is available for use with, and in addition to, the pre-cleaner when working in crops such as cotton and soybeans. This pre-screener (repair part 193 715 M91) must be ordered separately.

The cover and bowl are easily removed for cleaning and should be removed before raising the hood. This removal will prevent dirt and dust from entering the tube.

SPECIFICATIONS

CAPACITIES

Gasoline Tank	17 U.S. or 14.1 Imp. gallons
Cooling System	10 U.S. or 8 Imp. qts.
Crankcase:	
Gasoline	7 U.S. 5.8 Imp. qts.
A4-205 Diesel	6 U.S. 5 Imp. qts.
AD4-203 Diesel	7.5 U.S. 6.2 Imp. qts.
(Add 1/2 quart when changing filter)	
Power Steering:	
Pump Reservoir	1 U.S., 4/5 Imp. qts. - gasoline 1-1/4 U.S., 1 Imp. qts. - diesel
Steering Housing	2 U.S., 1.6 Imp. pts. - diesel 1-1/2 U.S., 1.2 Imp. pts. - gasoline
Transmission, differential and hydraulic system (If auxiliary hydraulic equipment is used requiring more than 1-1/2 gal., the amount in excess must be added for satisfactory operation. After implement is removed, excess must be drained.)	8 U.S. 6-1/2 Imp. gal.
Manual Steering Housing	1-1/2 U.S., 1.2 Imp. pts. - diesel 1-1/2 U.S., 1.2 Imp. pts. - gasoline
Air Cleaner	1-3/4 U.S., 1.4 Imp. qts.
Belt Pulley	3/4 U.S., 0.6 Imp. qts.
Planetary (rear axle)	1 U.S. or .83 Imp. qts.

DIMENSIONS

Wheel Base:	
Standard	84 inches
Hi-Clearance	84.64 inches
Twin, Tricycle	86.89 inches
Single, Tricycle	87.81 inches
Tread, Front:	
Standard	48 to 80 inches
Hi-Clearance	50 to 82 inches
Tread, Rear:	
Standard	52 to 88 inch (power) 56 to 84-3/8 (manual)
Hi-Clearance	52 to 88 inches
Twin, Tricycle	52 to 88 inches
Single, Tricycle	52 to 88 inches
Overall Height:	
Standard	57 inches
Hi-Clearance	63-5/8 inches
Tricycle's	63-5/8 inches
Ground Clearance - Minimum:	
Standard	12.65 inches

Hi-Clearance	14.77 inches
Tricycle's	14.77 inches

Cultivating Clearance - Minimum:

Standard	20.6 inches
Hi-Clearance	27.1 inches
Tricycle's	27-5/16 inches

Turning Circle:

Without Brakes	11 feet 8 inches
With Brakes	10 feet 6 inches

WEIGHT (Fuel, Oil and Water)

Standard - Diesel	13.6/12-28 tires - 4182 lbs. 14.9/13-28 tires - 4224 lbs.
Standard - Gas	13.6/22-28 tires - 3858 lbs. 14.9/13-28 tires - 3900 lbs.
Hi-Clearance - Diesel	12.4/11-38 tires - 4346 lbs. 13.6/12-38 tires - 4366 lbs.
Hi-Clearance - Gas	12.4/11-38 tires - 4022 lbs. 13.6/12-38 tires - 4062 lbs.
Dual Tricycle - Diesel	12.4/11-38 tires - 4240 lbs. 13.6/12-38 tires - 4280 lbs.
Dual Tricycle - Gas	12.4/11-38 tires - 3916 lbs. 13.6/12-38 tires - 3956 lbs.
Single Tricycle - Diesel	12.4/11-38 tires - 4274 lbs. 13.6/12-38 tires - 4314 lbs.
Single Tricycle - Gas	12.4/11-38 tires - 3950 lbs. 13.6/12-38 tires - 3990 lbs.

DIESEL ENGINE

Model	A4-203 (Swirl Type)
MFG	Perkins
No. Cylinders	4
Bore	3.6 inches
Stroke	5.0 inches
Displacement	203.5 cu. in.
Compression	17.4:1
Firing Order	1-3-4-2
Slow Idle Speed	550-600 RPM
High Idle Speed	2135-2185 RPM
Governor	Built-in injection pump
Valves	Overhead high lift
Tappet Clearance	0.010 inches, hot; 0.012 cold
Lubrication	Pressure by eccentric lobe pump to crankshaft, camshaft, connecting rods, and rocker arms.
Screened Intake	
Oil Filter	Full flow, replaceable cartridge type

Cooling	Circulation by centrifugal type pump with recirculating passage. Flow controlled thermostatically through tube and fin-type radiator. 10 PSI radiator cap.
Air Cleaner	Oil bath type
Injection Pump Timing	20° BTDC

DIESEL ENGINE

Model	AD4-203 (direct injection)
Mfg.	Perkins
No. Cylinders	4
Bore	3.6 inches
Stroke	5.0 inches
Displacement	203.5 cu. in.
Compression Ratio	18.5:1
Firing Order	1-3-4-2
Slow Idle	575-625 RPM
High Idle	2135-2185 RPM
Governor	Built-in injection pump
Valves	Overhead
Tappet Clearance	0.010" hot, 0.012" cold
Lubrication	Pressure by eccentric lobe pump to crankshaft, camshaft, connecting rods, and rocker arms. Screened intake.
Oil Filter	Full flow, replaceable cartridge type.
Cooling	Circulation by thermo syphon unit system recirculating passages. Flow controlled thermostatically through tube and fin-type radiator. 10 PSI radiator cap. Thermostat 172°.
Air Cleaner	Oil bath type
Injector Pump Timing	24° static BTDC

GASOLINE ENGINE

Model	G-176
Mfg.	C. M. C.
No. Cylinders	4
Bore	3.578 inches
Stroke	4.375 inches
Displacement	176 cu. in.
Compression Ratio	7.1:1
Firing Order	1-3-4-2
Timing	6° BTDC
Slow Idle	450-500 RPM
High Idle	2100-2150 RPM
Governor	Variable speed
Valves	Overhead, high lift (Rotocap or Exhausts)
Tappet Clearance:	
Intake	0.016 hot
Exhausts	0.018 hot
Lubrication	Pressure by gear pump to crankshaft, camshaft, connecting rods, and rocker arms. Float intake type.
Oil Filter	Full flow replaceable cartridge type.
Cooling	Circulation by centrifugal type pump with recirculating passage. Thermostatically flow-controlled through tube and fin-type radiator. 10 PSI radiator cap. Thermostat 160°.
Air Cleaner	Oil bath type
Spark Plugs	18MM, gap 0.025 inch, torque 32 to 38 ft.-lbs.

FUEL SYSTEM

Gasoline Tractors	Gravity flow, updraft dustproof type carburetor. Sediment bowl in line.
Diesel Tractors	System is pressure fed by a diaphragm type primary fuel pump. Line contains sediment bowl and 2 fuel filters with disposable elements.
Injection Pump	CAV distributor type
Fuel Injectors	Multi-hole type

ELECTRICAL SYSTEM

Diesel	
Battery	One 12-volt, 96 amp/hr., negative ground
Starting	Key-operated switch, solenoid, cold starting aid, safety switch operated by dual range lever, 12-volt, 4-pole starting motor.
Charging	12-volt, 3-brush generator. Output 10-12 amps. Combination voltage - current control and cutout type regulator.
Gasoline	
Battery	One 12-volt, 50 amp./hr., negative ground
Starting	Key operated, solonoid, safety switch operated by dual range lever. 12-volt, 4-pole starting motor.
Charging	12-volt, 3-brush generator; ouput 10-12 amps.
Combination Voltage	Current control and cutout type regulator.
Ignition	Automotive type with automatic spark advance. Contact point opening 0.018 to 0.024 inch. Dwell angle 25-34°. Auto advance 27° ± 2°. Static timing 6° BTDC.
Spark plugs	Champion D-16; AC-C85 or TC 85
Gap setting	0.023-0.028 inch

POWER TRAIN

Clutch	Two clutches - one spring-loaded 11" dia. spring-loaded type for transmission and one 9" dia. for the PTO.
Transmission	Constant mesh helical primary reduction gears with change speed gears, spur type. Transmission operates in connection with planetary gear assembly which provides 6 forward and 2 reverse speeds.
Multi-power Transmission	Provides 12 forward and 4 reverse speeds. May be shifted either up or down, on-the-go, without clutching.

POWER TAKE-OFF

Shaft	Splined, 1-3/8" dia. standard ASAE
Shaft Speed	Before 1963 - 540 RPM @ 1500 RPM (engine); 1963 and later - 540 RPM @ 1700 RPM (engine).
Control	13-position lever: (1) engine speed (2) ground speed, and (3) neutral.
Final Drive	Bevel, first stage, and planetary, second stage providing a 3.143 to 1 final gear reduction.

HYDRAULIC SYSTEM

Pump	4-cylinder, piston type, driven by scotch yoke, developing up to 2800 PSI @ 2300 RPM.

Approximate Capacity	4.2 gallons per min. at 540 RPM.
Lift Cylinder	Diameter 3", stroke 4-3/4"
Control	Located in pump.

POWER STEERING

Standard on diesel, optional on gas models.

Cam and lever type	Double-acting cylinder, 2-1/2" diameter with 5" stroke.

BRAKES

Independent self energizing 4" x 7" located on end of differential shaft. May be independent or dual-operated.

EXTERNAL HYDRAULIC CONTROL VALVE

Optional for all models. Will utilize a 2 or 3-spool valve for connecting either single or double-acting cylinders of 2" bore and 8" stroke.

Massey-Ferguson, through its nation-wide network of branches and dealers, is staffed and equipped to give you prompt and efficient service. When replacement parts are required, be sure to ask for genuine Massey-Ferguson parts sold only by your Massey-Ferguson dealer.

2M—11/78 W.A. FORM NO. 690 591 M1 LITHO IN U.S.A.